

SERVICE HINTS

By FRANK W. GRAY

When enameled or painted refrigerators arrive in a scratched or marred condition, the service man can make a fair job of restoring the finish by re-touching the damaged spots carefully with a fine paint brush, then surfacing the new paint with a very fine sand paper or pumice stone, and putting on the final finish with a light application of air brush spraying.

When the interior of the refrigerator is refinished, the box should be given a thorough airing out in order to remove the lingering paint odors before being put into use.

When a leaky needle valve is found to be so out of shape that it will not seat properly, the following method will be found helpful in refacing the valve: the needle valve is removed from its assembly, and is inserted in an ordinary electric drill. Then a piece of fine emery cloth is glued on a hardwood block which is fastened to the service bench.

The needle valve, rapidly revolving in the electric drill, may then be ground into perfect calibration by holding it lightly at the proper angle against the emery cloth grinding block. This method will suggest other applications to the service man.

Two temperature snap-action valves are apt to be annoyingly noisy in operation. Since it is necessary that the valve action be positive, there is no practical remedy by which the "snap" can be eliminated from the valve itself.

If, however, the valve is installed in the suction line very close to the compressor, it will be found that the normal operating noise of the machine will, to a great extent, smother the sound of the two-temperature valve. It is also helpful to bracket such valves to a firm foundation in order to cut down the telegraphing of the noise along the copper tubing.

A frequently-used design of water cooler for installation in multiple unit commercial work, is the vertical cooling coil with automatic expansion valve set in the center of a tank containing a sweet water bath, the water pipes being coiled around the outside of the tank.

Many service men follow the practice of guarding the water cooler against freezing up in an installation of this type, by installing a two-temperature valve in the suction line leading from the cooler back to the compressor.

This two-temperature valve may be eliminated from this type of installation if the thermostatic bulb of the automatic expansion valve is submerged in the sweet water bath, being bracketed at the base of the cooling coil at the junction of the coil and the suction line which leads up out of the tank and back to the compressor.

By placing the thermostatic bulb of the expansion valve in this position, more accurate temperatures in the water, and a less spasmodic variation of pressures will result. Also, the expansion valve will be cut off before a block of ice of sufficient size to freeze up the water pipes can form on the bottom of the tank.

The appearance of installations where the tubing is exposed can be improved by the use of tinned copper tubing. Copper tubing, after several months of service, may turn green through oxidation. This sometimes stains the wood and metal with which the copper comes into contact.

The tinning process costs very little, and the permanent silver coating of the tubing gives the job a finished appearance.

After long use needle valves, being of a harder metal than the brass valve seats, sometimes wear down the valve seats until a leaky condition prevails. When this condition is found it can be corrected by simply filing down the face of the valve seat assembly.

The refrigeration service man should familiarize himself with the operation and adjustments of electric motors. Every service man should know how to clean a commutator, adjust motor brushes, clean and oil the bearings of a motor, and make other repairs and adjustments on electric power units. A few days spent in an electric motor repair shop should train the service man to do this work so often required in his line of duty.

NEW SALES MANAGER NAMED FOR TIMKEN TUBE CO.

CANTON, Ohio—Walter H. Wiewel has been appointed sales manager of the Timken Steel & Tube Co. here. Mr. Wiewel has been connected with the company for several years as manager of steel sales in New York City.

Cold Controls Used in Automotive, Aviation, Railroad, Other Industries, Krampe Shows

By Hugh J. Krampe, Armstrong Cork Co.*

OBVIOUSLY, imagination is necessary both from within and without an industry. The more remote an industry is from contact with its public, the less chance there is for germinating ideas which will advance that industry. We, as refrigerating engineers, are therefore indebted to the manufacturers of the mechanical household unit, whose aggressiveness and vision have made the public Refrigeration Minded. Heat as an aid to processes in industry, has been used for centuries. The application of refrigeration in industry is but a recent art. For a long time refrigeration was only used in preparing and preserving food. The many recent uses of refrigeration in process work to develop new and better products naturally suggests "What can we do with even lower temperatures?" The answer is, of course,—"We will see."

So we trot out our brains and develop various combinations of refrigerating units, and low temperature cork insulated test rooms, and begin the battle with nature. We commercially accomplish temperatures as low as minus 60° F. and already, we have products made definitely better because of these lower test or production conditions. Let's take stock and see some of the things which have actually been accomplished by first starting with a relatively inexpensive low temperature test room.

Is a common carrier air brake reliable—can it be entrusted with our lives with the outside temperature at minus 45° F.? It can, for a reliable manufacturer of air brakes has tested his article at that temperature at his own plant. Is the railway signal equipment we trust our lives to, reliable at minus 45° F.? At least one manufacturer can definitely say yes, for his equipment meets that test at his plant. Is that tractor capable of performing at minus 30° F.? At least one manufacturer can say with assurance—yes!

Today prestige earned by millions in advertising can be quickly tossed into the ash can through poor engineering—checked by experience and figures—but not double checked by the cold facts from Cold Tests. So the stage is set—the product is tried—and its shortcomings are corrected at the right place—in the factory—and not in the field. Public confidence is promoted and the product broadens its market rapidly. Let us listen in on what Fred Luker says in his brief, "The Importance of the Cold-Room in the Engineering of Hupmobiles."

"After using an efficient and satisfactory cold-room in the experimental engineering of our product for two years, we consider this equipment indispensable."

"Naturally, development of car design goes on at steady pace throughout the year."

*Note: This article was prepared for Electric Refrigeration News by Mr. Krampe, based on his talk at the recent A. S. E. E. convention.

CANADIAN FIRM WILL MAKE JOHNSON OIL BURNERS

MONTREAL, Que.—Johnson oil burners will soon be manufactured by a new Canadian company to be known as the S. T. Johnson Oil Burners of Canada, Ltd., according to the S. T. Johnson Co., Oakland, Calif. The new company will be under the management of Henry Stanyon, vice president.

The increased duty on burners shipped over the boundary is the reason given for the formation of this company to manufacture them in Canada.

G. E. INTEREST SECURES ASSETS OF PENN HEAT CONTROL CORP.

PHILADELPHIA—The Penn Heat Control Co., in which the General Electric Co. has a controlling interest, has been formed to take over all assets of the Penn Heat Control Corp., which specializes in equipment for automatic regulation of temperature in household heating.

The new company will continue to do the work that was previously done by the Penn Heat Control Corp., and will retain all of its personnel and organization. New G. E. products in this field will be announced shortly.

WOLVERINE COPPER TUBING PRODUCTION UP IN 1930

DETROIT—Production of dehydrated seamless copper tubing during the past year by the Wolverine Tube Co., of this city, exceeded the 1928 volume by more than 400 per cent, according to officials of that company.

A recent development by this organization is the production of tubing that is tinned both inside and outside, they pointed out. The tubing is sealed in assorted lengths, and distributed through jobbing outlets. It is made in accordance with A. S. T. M. specifications b-68-30T.

year. The two extremes of temperature under which the car must operate are always before the engineer. At any time during the year there is some section of the country in the South, warm enough to predict the performance under hot weather. Performance under zero or sub-zero conditions presents an entirely different situation; and the engineer realizing that errors made in specifications for cold performance are quite expensive to the customer and manufacturer, always wants a cold-room for his test data.

"The following covers fairly well, the testing done in the Hupp cold-room:

"Cranking requirements—which has to do with the starting motor ability and battery capacity.

"Carburetor cold-starting ability—this ability of a given carburetor design is quite important and very often is a deciding factor in an engineering approval. Carburetors are bought on the outside—considerable development of the carburetor calibration in this respect is done directly under our supervision. Additional accessories to the carburetor equipment, such as electric fuelers or mechanical primers for better cold starting are tested.

"Cooling system warm-up and control—this covers engine thermostat and bypassing circulation, also radiator shutters and their control with thermostatic devices.

Trade Associations

UNDOUBTEDLY the trade association can and should operate with a new conception of what it should do and with more competency and power.

It should become the business research organization, the statistical clearing house and the mechanism for putting forth policies and controls that will aid an industry branch to function most economically and effectively.

In addition, it is the unit of business that can do the co-operative work necessary to industry branches if markets are to be developed quickly and efficiently and if industry is to operate with a united front in its approach to the markets.

Planning and analysis by individual enterprises and team effort through the agency of the trade associations are the roads to better and more stable business for the electrical industry.—Electrical World, May 9.

"Warm-up performance—this deals with ability of the design to get into smooth action from a cold start. This work covers the carburetor calibration for this part of the range—choke manipulation and intake manifold characteristics.

"Engine lubrication—by cut-away sections and other means, searching investigations are made into the condition existing when the engine is first started cold with congealed or highly viscous oil in the sump. The first minute or two of engine operation at zero-or-sub-zero temperatures, is the most trying or destructive condition the engine works under.

"Shock absorbers—interesting indeed, is that fact that within 15 minutes or so we can pull a shock absorber out of the cold-room, put it into specially designed testing equipment and determine the action over the whole range of operating temperature. Otherwise we would have less than a guess that the car would ride satisfactorily winter and summer.

"Miscellaneous accessories—many and varied are the parts demanding cold operation, fuel pumps, batteries, ignition cable, windshield wipers, and defrosters.

"Car Heater specification—a service accessory approved in the summer time. A car is equipped and put into the cold-room and in less than 8 hours we know in July or August whether the particular heater will be satisfactory in January. In no other way could we even guess at the result."

What will a recording thermometer do at minus 55° F.? Will any ink do if not, what inks will? What lubricating oil is good—which ones are bad? Reflect on the fact that the films which have so materially broadened our education and added so much to our enjoyment of life, were materially made better with refrigeration at minus 40° F. Quick-freezing will make our foods better as soon as General Foods and others get a public acceptance of proven principles.

The U. S. War Department, Air Corps has two low temperature test rooms and is adding a third. All to make better planes to better defend us in case of war, but primarily to promote safer aviation, something we are all vitally interested in. It is to be hoped that private aviation enthusiasts will do something along these lines.

The University of Illinois operates a low temperature test room to gather reliable data on steam radiation. The University has some interesting results from these tests, all available for the asking.

For instance, we are talking refrigeration to cool homes in summer. Naturally, better insulated homes means 1 in. or more of approved insulation—this is quite possible. But where shall we put the insulation? The University of Illinois says "put it inside where the material will get in its work quickly."

LITERATURE OF MANUFACTURERS

Catalogues, bulletins and other material recently issued.

Manufacturers are requested to send copies of new trade literature to Electric Refrigeration News.

Milk Cooling Units

The "Pacific" line of commercial refrigeration equipment for milk cooling applications is described in a recent broadside of the Kohlenberger Engineering Corp. of Fullerton, Calif. These milk coolers consist of a self-contained compressor unit, a brine tank, a brine circulating pump, and an aerator. Direct expansion dairy cooling units are also offered.

Trumbull Electric Mfg. Co.

The complete line of "Circle T" safety switches, panel boards, control equipment, knife switches, wiring devices, and switchboards of the Trumbull Electric Mfg. Co. is presented in the 240 pages of catalogue 15 of that company. In addition to the specifications of the Trumbull products, the publication provides wiring data and current ratings for the common sizes of two phase and three phase motors.

Liquid Cooler Service Manual

Information on engineering, installation, and service of water cooling equipment of the Liquid Cooler Corp. of Detroit is incorporated in the new manual of that firm. It is divided into three sections, giving timely data to each of the three classes of field men, sales engineers, installers, and service men.

Link-Belt Drives

The line of chain drives offered by the Link-Belt Co. of Indianapolis, Ind., is portrayed in a new illustrated book, No. 1,293 of that company. It includes descriptions and installation views of its silent chains, roller chains, herringbone gears, herringbone speed reducers, worm gear speed reducers, steel and ballable chains, variable speed transmissions.

Inco Nickel Processes

The mining, ore concentration, smelting, refining, and manufacturing operations of nickel, as conducted by the International Nickel Co., are portrayed in the latest issue of Inco magazine. The articles are attractively illustrated, and present much interesting information about this vast enterprise.

G-E Brazing Equipment

Bulletin GEA-131A of the General Electric Co. considers electric brazing apparatus furnished by that company for brazing or hard soldering brass, copper, bronze or steel in repair or production work. Hand brazing procedures are explained, and the various alloys suitable for electric brazing described.

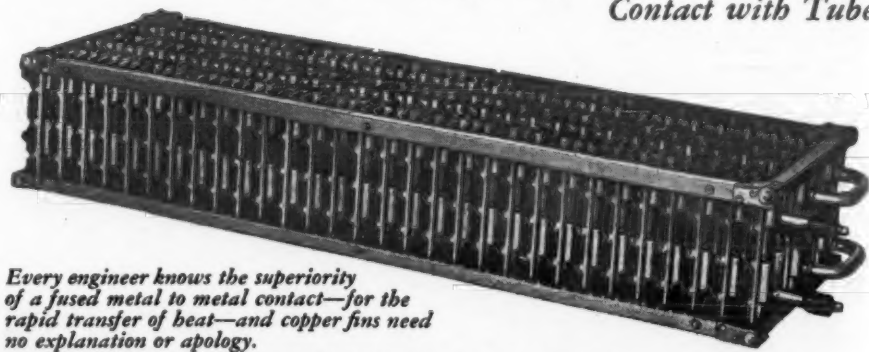
STANDARD REFRIGERATING APPLIANCES

For more than five years a supplier of standard devices to the refrigerating machine industry

AIR-WAY
CONDENSERS
DEHYDRATORS
DESSERT PANS
COMMERCIAL
EVAPORATORS
DOMESTIC
DRY COILS
DOMESTIC
EVAPORATORS
EXPANSION
VALVES
ICE TRAYS
LIQUID
FILTERS
SCREENS

COMMERCIAL EVAPORATORS

Vertical Flue Type Copper Fins—in Thermal Contact with Tubes



Every engineer knows the superiority of a fused metal to metal contact—for the rapid transfer of heat—and copper fins need no explanation or apology.

COOLING UNIT CAPACITIES

"The size of the unit contemplated should not be calculated to substantially equal the total wall area of the chamber in which the installation is to be made, but should be calculated in accordance with the required evaporator temperature, the insulating value of the chamber walls and the total wall area of the chamber."

The FEDDERS VERTICAL FLUE TYPE COPPER FIN EVAPORATORS are scientifically designed and the sectional construction permits a wide variety of designs to fit every purpose and gives the refrigerating machine industry an evaporator which we believe to be superior to any type on the market. It is offered at a price comparable to the high-quality of these units and may be obtained with or without Expansion Valve.

Send for bulletins describing this complete line.

FEDDERS MANUFACTURING CO., Inc.
57 TONAWANDA STREET
BUFFALO, N. Y.

DETROIT OFFICE:
320 BEAUBIEN ST.

ELECTRIC REFRIGERATION NEWS

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
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DETROIT, MICHIGAN, JUNE 3, 1931

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Aug. 1, 1927, at Detroit, Mich.FIFTEEN CENTS PER COPY
TWO DOLLARS PER YEARNEMA SESSIONS
DRAW COMPLETE
REPRESENTATIONCollection of Statistics
Urged By Cockrell;
Groups Meet

DETROIT — Full representation in terms of companies and committees marked the sessions of the refrigeration division, National Electrical Manufacturers Association, held at the Kelvinator plant Wednesday, May 27.

Standing committees on codes and ordinances, industrial research and commercial practice, also traffic, patent, and technical committees gave serious attention to problems of common interest, and submitted their reports to the executive committee for approval.

Following a luncheon in the Kelvinator dining room there was a general meeting of all representatives addressed by F. M. Cockrell, publisher of *ELECTRIC REFRIGERATION NEWS*, C. E. Greenwood, commercial director of the National Electric Light Association, and P. B. Zimmerman, general manager of the electric refrigeration department of General Electric Co.

Need Statistics to Study Cycle

Mr. Cockrell urged increased attention to industry statistics. He pointed out that the business cycle of the electric refrigeration industry does not coincide with that of general business.

"The electric refrigeration industry had a boom in 1924 and 1925 which resulted in over-expansion during 1926," he said. "During the next two years there was a general house cleaning and reorganization accompanied by more economical management."

"When the stock market ran wild in 1929, the electric refrigeration industry was not a participant. The industry was forging ahead rapidly on the basis of hard work and sound methods instead of speculation. When the depression came, the electric refrigeration industry found itself in good condition and unburdened by excessive inventories. Furthermore the industry had the work habit. It was accustomed to a strenuous job. As a result, electric refrigeration has gone through the last 20 months in good order, and has continued to make new high sales records."

May Overshoot Market

"There is a very real possibility, however, that the industry may overshoot its market sometime during the next few years. The present manufacturers have large productive capacity which is constantly being extended. New companies are coming into the field. Distributor and dealer organizations are being expanded at a rapid rate, and the whole industry is geared up for the most intensive sales activity."

"The outlook for the future is highly promising and there is every reason to look forward to a period of great prosperity. In such a situation it will be the part of wisdom to take every precaution against any excesses which may prove harmful."

Mr. Cockrell urged that production and sales figures for the various classes

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VETERAN FRIGIDAIRE DEALER
IN CONNECTICUT SELLS OUT

NORWICH, Conn.—Carl W. Brown, reported to be the oldest Frigidaire dealer in Connecticut, has sold out his business to a newly-incorporated concern known as the Electrical Refrigerating Co., which has taken over the entire stock and the store at 64 Broadway.

Officers of the new concern are: J. O. Hull, president and treasurer; Lucy L. Hull, vice president and secretary, and Jacob Gallup, Jr., assistant treasurer. Mr. Gallup has been sales manager for Carl W. Brown, Inc., for the past three years.

ICE COMPANY IN GREEN BAY
TO SELL SERVELS

GREEN BAY, Wis.—Miller-Rasmussen, local ice concern, has announced the expansion of its business to include the Servel electric refrigerator. The concern has been engaged in the ice refrigeration service in this city for over 32 years and only recently completed the installation of new equipment in its ice manufacturing plant. The concern also handles ice boxes.

What Electric Refrigeration
Means to Public Utilities

Estimated Number of Household Electric Refrigerators in Use by Dec., 1931. 3,500,000
Average Annual Income to Public Utility for Electricity—\$30. Total . . . \$105,000,000
Estimated Number of Commercial Electric Refrigerators in Use by Dec., 1931. 1,000,000
Average Annual Income to Public Utility for Electricity—\$100. Total . . . \$100,000,000
Combined Annual Revenue from Household and Commercial Refrigeration. \$205,000,000

BLIMPS RIDE HIGH
AS GEORGIA POWER
SALES NEAR QUOTA

ATLANTA—Blimps representing divisions of the Georgia Power Co. are riding high and fast these days, as sales of electric refrigerators in the spring campaign through May 27 amounted to \$465,239, or 54.7 per cent of the quota in 42 per cent of the campaign time.

The campaign, which opened on May 4 and closes June 30, is being conducted along the lines of a blimp race. General Electric domestic and commercial refrigerators and Kelvinator commercial equipment are being featured.

Sales of electric refrigerators in 1930 by the company, announced in a recent report, totalled 4,145 units. It is estimated that the 1930 refrigeration sales will add a load of 3,730,500 kilowatt-hours to the company's lines, with a revenue of \$149,220.

OHIO PUBLIC SERVICE CO.
TO CONTINUE SALES DRIVE

CLEVELAND — Total refrigeration sales in the spring campaign of the Ohio Public Service Co. on May 29, two days before the closing date, totalled 1,151 units, according to C. L. Dunn of the New Business Department.

On account of the late spring and cool weather, Mr. Dunn stated that the refrigeration campaign, originally scheduled to close June 1, will be continued during the month of June. The quota for the 51 working days of the drive up to June 1 was set at 1,200 machines.

100 KELVINATOR DEALERS
PLAN CAMPAIGN IN SOUTH

BIRMINGHAM, Ala.—Kelvinator dealers in north Alabama met here recently for the spring sales convention. Approximately 100 dealers attended, according to R. P. McDavid, general manager, Clark and Jones, distributor.

Business sessions were held in the morning and early afternoon, after which the dealers attended a Southern League baseball game.

J. S. Sayre, sales manager, Vance Woodcox, sales promotion manager of Kelvinator Corp., Detroit, and George E. Wagner and Charles Meredith, zone representative attended.

Utility Selling Bills
Up in Alabama,
Wisconsin

MONTGOMERY, Ala.—A bill prohibiting public utilities from engaging in retail merchandising has been recently introduced to the Alabama legislature. The bill is patterned after the act passed in Oklahoma.

Both Oklahoma and Kansas have banned central station merchandising this year.

Similar measures have been killed by the Nebraska, Indiana, Nevada and Missouri legislatures, and measures of this nature are now pending in the legislature of Tennessee, Pennsylvania, Texas and Illinois.

WISCONSIN

MADISON, Wis.—A bill introduced in the Wisconsin Assembly recently would prevent utility companies from selling retail merchandise.

Companies selling such goods or discontinuing service for failure to pay for them would be subject to a fine of \$50 to \$200 for the first offense, and revocation of their charter for the second offense.

ILLINOIS

SPRINGFIELD, Ill.—No action was taken by the Illinois legislative subcommittee on Representative Roy Barnes' house bill, which would prohibit utilities from engaging in merchandising, at the hearing held Saturday, May 23, in Chicago, according to Representative Carl J. Jobst, chairman of the subcommittee.

At this meeting arguments were heard from persons who are opposed to the bill.

OKLAHOMA

OKLAHOMA CITY, Okla.—"Utility companies of Oklahoma will abide by the new law which prohibits them from merchandising electric refrigerators and other appliances, effective July 11, although several attorneys have given opinions that the law is unconstitutional." (Concluded on Page 2, Column 4)

CLEVELAND LEAGUE'S
EXHIBITS, MEETINGS
INCITE HIGH INTEREST

By George F. Taubeneck

CLEVELAND — Jack North's widely known Electrical League of Cleveland has an active and wide-awake refrigeration committee which functions the year 'round. Each spring this committee conducts an electric refrigeration campaign, and this year it has automatically constituted itself the electric refrigeration bureau of Cleveland, although it does not bear that title.

Since this campaign started (May 18), inquiries on electric refrigeration have increased 700 per cent, according to Ted Losby, the Electrical League headquarters man in charge of appliance activities.

Under the direction of this committee, an advertising campaign, sales meetings (Concluded on Page 4, Column 4)

KNAPP VISITS NORGE MEN
TO PLAN SUMMER DRIVE

DETROIT—Norge distributors were drawn in to four central points, during the week of May 25, to meet with John H. Knapp, vice president and director of sales of the Norge Corp.

Within a period of five days, necessitating a 3,500-mile trip, Mr. Knapp states he was able to obtain unified agreement from the entire Norge distributive personnel on plans for summer sales activity. Accompanying him were Harry W. Terry, account executive, and Ralph Caldwell, director of merchandising, the (Concluded on Page 4, Column 5)

APARTMENT HOUSE SALES
INCREASING, G. E. MAN SAYS

CLEVELAND—Sales of refrigerators to apartment house owners by General Electric refrigerator distributors in all parts of the country are showing a decided upturn, it was declared recently by J. J. Donovan, manager of the Apartment House Division of General Electric Refrigeration Department.

Mr. Donovan pointed to the installation within the past few weeks of more than 1,500 electric refrigerators in the following areas: Cincinnati, Boston, Newark, Washington, Hartford, Albany, and Annapolis.

(Concluded on Page 20, Column 1)

"INVEST IN AN ELECTRIC REFRIGERATOR"

THIS is the keynote of the nation-wide educational campaign sponsored by the Electric Refrigeration Bureau of the National Electric Light Association. The three-year program is just getting under way. Up to the present more than 400 local bureaus have been established and sales promotion material, prepared by the headquarters organization, has been purchased for use in 8,500 communities.

This campaign offers the public utility an opportunity to participate in developing the market for the premier load-building electrical appliance—the electric refrigerator. The public utility may serve its own interest and the interest of the public by giving leadership and substantial financial support to this program.

It represents an opportunity to build good will, to foster friendly relations with dealers and to increase revenue. It does not involve the public utility in any controversial issue pertaining to merchandising policy. By means of this program the public utility may "invest" in electric refrigeration and be sure of a profitable return.

TRADE RELATIONS
TO BE DISCUSSED
AT ATLANTIC CITYRefrigeration Exhibits
To Feature Annual
Convention

ATLANTIC CITY, N. J.—Public policy and trade relations will be among the major topics to be discussed by representatives of the nation's public utilities who will gather here June 8 to 12 for the fifty-fourth convention and exhibition of the National Electric Light Association.

Many electric refrigeration manufacturers will have elaborate exhibits prepared for this convention, which will draw representatives from almost every branch of the electrical industry.

Beginning Tuesday, general sessions open each morning at 10 o'clock. During each of three afternoons at 3 o'clock, one of the various sections will convene.

The accounting national section meets Tuesday afternoon, as does the engineering national section. Wednesday the commercial national section has its session, and Thursday the public relations national section will meet. Thursday night the public policy committee will have its session.

Pageant by Native Indians

The President's Reception will be held Monday night, the reception to be followed by dancing. Tuesday night's entertainment will consist of a pageant, "The First American," with native Indians as the actors.

A card party has been arranged for the women guests Wednesday afternoon, to be followed by dancing that night.

Finals in the national employee speaking contest will be held at 2:30 o'clock Monday afternoon. Awards will be given to the winners Thursday afternoon.

Speakers at the first general session include President W. Alton Jones, Treasurer P. S. Young, and Managing Director Paul Clapp; M. H. Aylesworth, president of the National Broadcasting Co.; Harry Reid, chairman of the Public Relations national section; David Lawrence, editor and publisher of the *United States Daily*; and R. F. Pack, former president of the N. E. L. A.

Speakers at Second Session

At the second general session the speakers will include E. W. Goldschmidt, chairman of the exhibition committee; Judge William Lynn Ransom; J. F. Owens, first vice president of the N. E. L. A., who will discuss trade relations; T. O. Kennedy, vice president of the Ohio Public Service Co.; and Gus W. Dyer, editor of the *Southern Agriculturalist*.

A demonstration, "Energy Through Space," will be made by the General Electric Co.

A memorial report by W. H. Onken, Jr., vice president of the Security Owners' Association, will open the third general session. C. E. Groesbeck, president of the Electric Bond & Share Co.; W. C. Mullendore, vice president of the Southern California Edison Co.; and Samuel Insull are the other scheduled speakers.

Friday's general session will bring Gerard Swope, president of the General Electric Co.; Marshall Sampsell, president of the Society for Electrical Development; Edwin Gruhl, vice president of the North American Co.; Franklin (Concluded on Page 2, Column 4)

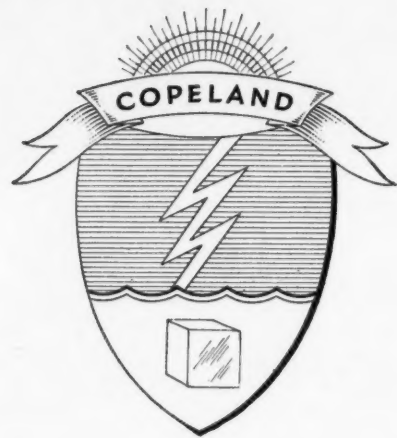
McQUISTON RETIRES FROM
WESTINGHOUSE JOB

EAST PITTSBURGH, Pa.—J. C. McQuiston, general advertising manager of the Westinghouse Electric and Mfg. Co., has announced his retirement, effective June 1, 1931.

For 29 years Mr. McQuiston has been in charge of advertising for Westinghouse.

In 1920, when the first broadcast was inaugurated on station KDKA, Mr. McQuiston arranged its pioneer program. He has been in general charge of all radio programs for Westinghouse broadcasting stations since that time.

As president of the Association of National Advertisers and in association with the electrical and allied industries he became well known outside of his position.



COPELAND DISTRIBUTORS SET NEW SALES RECORDS!

COUNTRY-WIDE REPORTS SHOW TREMENDOUS GAINS FOR COPELAND REFRIGERATION

FROM all parts of the country Copeland dealers and distributors have reported that the 1931 Copeland line is setting new high sales records.

In the first six months of Copeland's fiscal year Boston, Mass., sales increased 89%. Copeland sales in Buffalo, N.Y., increased over 100%!

Sales through the three Copeland branches to May 1st show a tremendous gain. Taken together, Copeland sales in New York, Chicago and Detroit show an increase of 209% over the same period last year!

Here are additional striking gains: On May 1st, the Copeland Columbus, O., distributor passed his entire 1931 sales quota. So did the Minneapolis, Minn., distributor.

Many distributors new with Copeland in 1931 have also made exceptional records as regards volume. Among these are the distributors in Wilmington, Del.; Monroe, La.; Milwaukee, Wis.; Pittsburgh, Pa.; Selma, Ala.; and Los Angeles, Calif.

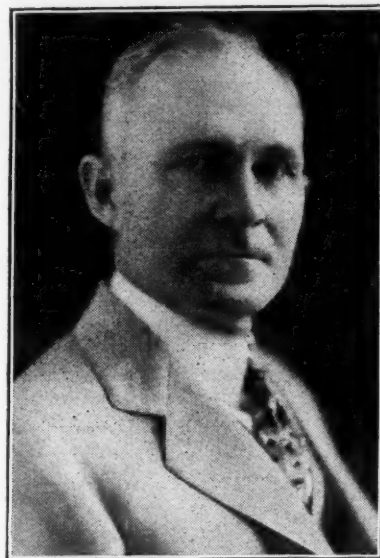
Facts and figures from all over the United States point to one conclusion: The 1931 Copeland line has been exceptionally well received by the public. This is but natural, for the new Copelands combine the many advanced features that electric refrigeration today provides.

Nineteen-thirty-one promises to be a record-breaking year for Copeland and its distributing organization. It's not too late to tie-up with Copeland! Decide now to get a fresh start—write or wire for sales franchise details today!

COPELAND SALES COMPANY
332 Cass Avenue, Mount Clemens, Michigan

FOR THOSE WHO WANT THE FINEST

President-Elect of N. E. L. A.



J. F. Owens

CONVENTION DRAWS PROMINENT SPEAKERS

(Concluded from Page 1, Column 5)
Heydecke, general auditor of the Public Service Electric & Gas Co.; and Frank W. Smith, vice president of the United Electric Light and Power Co.

Joseph B. Groce of the advertising and publicity committee will talk about the work of that committee at the meeting of the public relations section. Other speakers at that section meeting will be James B. Black of the North American Co., who will speak on "Customer Ownership;" Homer Ferguson, past president of the United States Chamber of Commerce, who will discuss "Government in Business;" and Homer E. Niesz, who will talk on "Employee Training."

Preston S. Arkwright, chairman of the public policy committee, will make his report at the public policy session Thursday night. He will also announce the winner of the Charles A. Coffin medal at that time. Merle Thorpe, editor of *Nation's Business*, will speak on "Our Vanishing Economic Freedom."

OKLAHOMA UTILITIES STOP SELLING REFRIGERATORS

(Concluded from Page 1, Column 3)
tional," declares E. F. McKay, manager of Oklahoma Utilities Association.

No contest has been started against operation of the law, the association manager said, and every utility in the state will abide by the act passed by the last legislature.

Effect of the operation of the new law will be to throw about 300 persons out of employment in the state, and it will leave many small Oklahoma cities without electric and gas appliance stores, McKay said.

Most of the utility companies of the state are now making efforts to dispose of their stocks, although they are permitted by the law to sell as long as they have stock on hand which was purchased before the law was passed.

BOSTON UTILITY FAR AHEAD OF 'OLD MAN QUOTA'

BOSTON—The Edison Electric Illuminating Co. is far ahead of quota in the drive started April 1 to sell 1,000 refrigerators by June 30, according to Richard Lincoln, superintendent of the appliance department, and William A. Blachford, head of the refrigeration division.

At a campaign banquet May 22, a roll call was taken, and it was found that 900 sales had been made against a quota of 1,000 with over five weeks yet to go.

BOHN NOW SELLING ELECTRIC REFRIGERATOR IN BRANCHES

ST. PAUL, Minn.—Merchandising operations for the new Bohn electric refrigerator during 1931 will be limited to branch stores in New York City, Chicago, Minneapolis and St. Paul, according to L. L. Murray, assistant sales manager of the Bohn Refrigerator Co. of this city.

Present plans for the new refrigerator, Murray states, call for a limited production with close supervision of each installation by the branches in the above mentioned cities.

FORBES PIANO CO. ANNOUNCES COPELAND DEALERSHIP

BIRMINGHAM, Ala.—Forbes Piano Co., formerly Majestic distributor here, has been appointed dealer by Copeland. Forbes has its main office at 1922 Third Ave. and also has branches at Montgomery, Anniston and Decatur.

INDUSTRY LEADERS DISCUSS STATISTICS AT N. E. M. A. MEETING

(Concluded from Page 1, Column 1)

of equipment be collected and released at regular intervals by the Association, and offered the services of the News in gathering similar figures from non-member companies to the end that the totals would be truly representative of the entire industry. The availability of such data, he said, should be extremely valuable to production and sales executives in planning the programs of the individual companies.

Mr. Greenwood summarized the progress of the Electric Refrigeration Bureau of the National Electric Light Association, which is now embarked upon a three-year program of cooperative advertising and sales promotion.

He reported that 400 local bureaus have been organized in the principal cities throughout the country, and that a total of 8,500 communities are now actively using the material prepared by the headquarters' staff.

So far, five manufacturers have contributed to the initial budget of \$275,000 for advertising in national magazines, and the production of literature, signs, banners and other material to be used locally. The contributing companies are General Electric, Frigidaire, Kelvinator, Westinghouse, and Norge.

Ratio of Expenditures

It is estimated that the expenditures by local organizations will average over \$3.00 to every one spent by the manufacturers, and that this ratio may reach five to one. The total expenditures will be considerably over \$1,000,000, he stated.

Mr. Greenwood displayed examples of cooperative newspaper advertisements which are now appearing in local newspapers. He also showed pictures of impressive window displays by public utilities, and cooperative exhibits by local groups. Particular mention was made of the refrigeration campaigns being carried on in New York, Philadelphia, Cleveland, St. Louis and other large cities.

Mr. Greenwood extended an invitation to other manufacturers to contribute to this broad educational campaign designed to impress the public with the fact that the purchase of an electric refrigerator is a profitable investment.

Mr. Zimmerman expressed approval of the work being done by the N.E.L.A. headquarters organization. He called attention, however, to numerous opportunities for increasing the effectiveness of the campaign. He suggested that manufacturers use all available means to keep their own organizations informed regarding the activities, so that the fullest possible benefit would be secured.

Following the business sessions, the electric refrigeration division adjourned to the Essex Country Club where they spent the evening as guests of G. M. Johnson, president of the Universal Cooler Corp., Detroit. Comment on Mr. Johnson's party appears in "The Expansion Valve" columns of this issue.

Among Those Present

Those who attended were:
Division members—Louis Ruthenburg, Copeland Products, Inc.; E. G. Biechler, Frigidaire Corp.; H. M. Williams, Frigidaire Corp.; J. A. Harlan, Frigidaire Corp.; R. E. Smithson, Frigidaire Corp.; P. B. Zimmerman, General Electric Co.; G. W. Mason, Kelvinator Corp.; Howard E. Blood, Norge Corp.; Frank E. Smith, Servel, Inc.; R. T. Frazier, Tennessee Furniture Corp.; G. M. Johnston, Universal Cooler Corp.; M. C. Terry, Westinghouse Elec. & Mfg. Co.; Carl D. Taylor, Westinghouse Elec. & Mfg. Co.; Wm. F. Swezey, Westinghouse Elec. & Mfg. Co.; A. W. Berresford, N.E.M.A.; E. S. Aumend, N.E.M.A.

Industrial Research Committee—C. D. Taylor, Westinghouse Elec. & Mfg. Co.; W. E. Landmesser, General Electric Co.; G. M. Johnston, Universal Cooler Corp.; J. M. Fernald, Kelvinator Corp.; E. T. Williams, Servel, Inc.; Howard E. Blood, Norge Corp.; R. E. Smithson, Frigidaire Corp.

Technical Committee—H. M. Williams, Frigidaire Corp.; John Wyllie, Kelvinator Corp.; Glenn Muffy, Copeland Products, Inc.; P. B. Zimmerman, General Electric Co.; H. C. Hayes, Norge Corp.; C. H. Tanger, Servel, Inc.

Commercial Practices Committee—Col. F. E. Smith, Servel, Inc.; H. W. Burritt, Kelvinator Corp.; J. A. Harlan, Frigidaire Corp.; G. S. Smith, Copeland Products, Inc.; P. B. Zimmerman, General Electric Co.

Patents Subcommittee of Commercial Practices Committee—W. F. Swezey, Westinghouse Elec. & Mfg. Co.; C. G. Smith, General Electric Co.; J. King Harness, Copeland Products, Inc.; L. D. Burch, Kelvinator Corp.; E. T. Williams, Servel, Inc.

Codes and Ordinances Committee—M. C. Terry, Westinghouse Elec. & Mfg. Co.; R. E. Smithson, Frigidaire Corp.; J. J. Donovan, General Electric Co.; C. C. Spreen, Kelvinator Corp.

JONES TO SELL MAYFLOWER

WATERBURY, Conn.—The Archie T. Jones Co. has been named distributor for the Mayflower refrigerator in this district.

A MILLION USERS

... HAVE BECOME
A MILLION SALESMEN

A MILLION USERS have become a million salesmen! They are boosting the General Electric to their friends—telling about the General Electric brand of performance . . . economy . . . dependability . . . out of their own experiences in their own kitchens. A million users become a million salesmen. Ask YOUR neighbor!

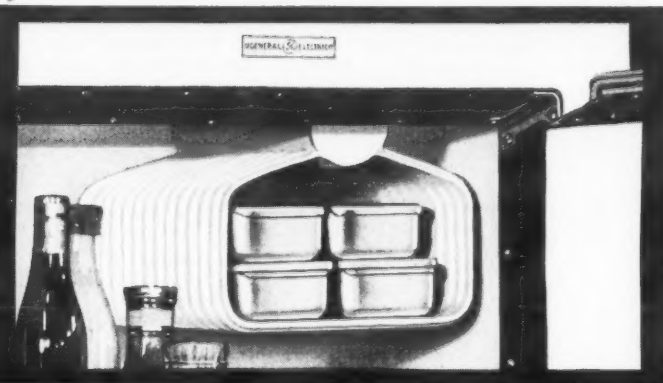
Many vital advantages are responsible for General Electric's outstanding sales records. There's the famous Monitor Top that defies dust, moisture and tampering fingers. All-Steel Cabinets—rugged, durable, wear resisting. Sliding Shelves—exclusive with General Electric—to bring food in easy reach. Acid resisting, porcelain lined interiors. Accessible fast freezing control. And a complete 3-Year Guarantee on all models—promising freedom from service expense.

New lowered prices are selling more General Electrics. Attractive terms are bringing in thousands of prospects. But it's performance . . . in more than a million kitchens . . . that clinches sales. Ask any General Electric user what his experience with the General Electric has been, and you'll understand just why the Monitor Top is leading the refrigeration parade . . . going on to new records every month!

General Electric Company, Electric Refrigeration
Department, Section D F 61, Hanna Building,
1400 Euclid Avenue, Cleveland, Ohio.



NEW SLIDING SHELVES—An exclusive General Electric feature are shown in the above illustration.



GENERAL ELECTRIC SANITARY SUPER-FREEZER
Full vision, porcelain super-freezer; easy to keep clean. Open—easy to see and easy to get at.

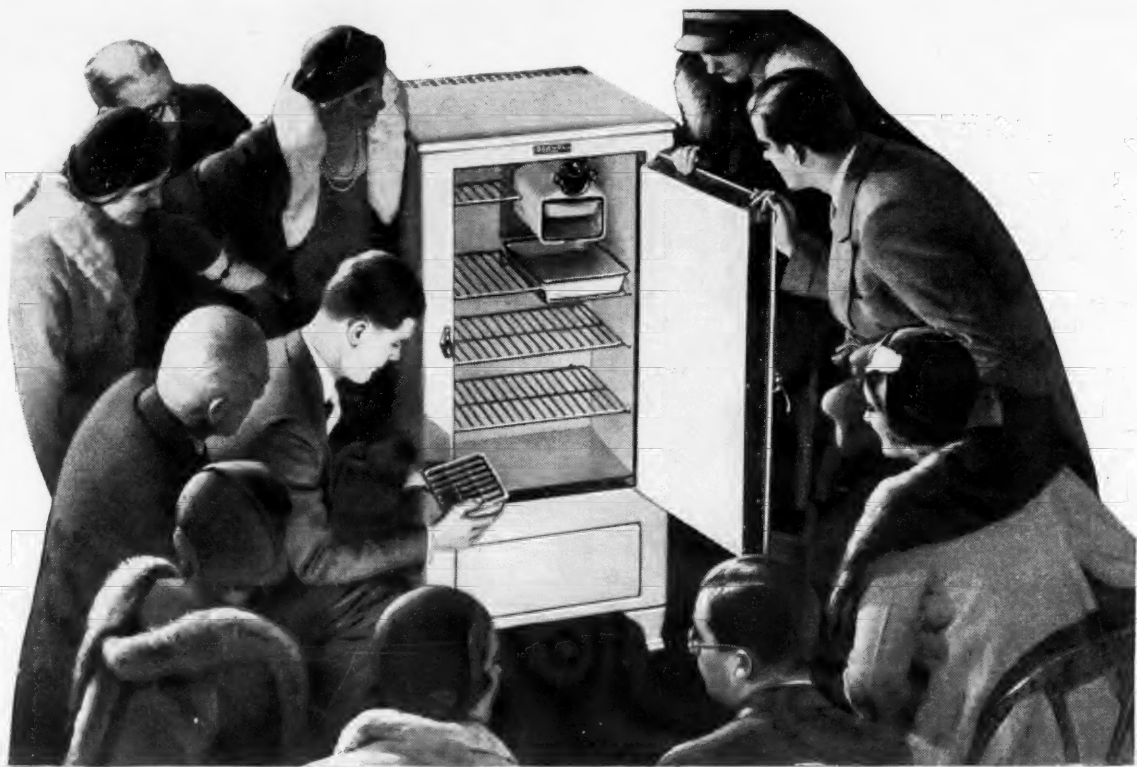
NEW LOW PRICES • NEW REFINEMENTS • 3-YEAR GUARANTEE

Join us in the General Electric Program, broadcast every Saturday evening on a nation-wide N. B. C. network.

GENERAL ELECTRIC

ALL-STEEL REFRIGERATORS

DOMESTIC, APARTMENT HOUSE AND COMMERCIAL REFRIGERATORS • ELECTRIC WATER COOLERS



Simplified Refrigeration

A Quick MARKET

A Profitable MARKET

*for a refrigerator
as outstanding as
this one*

THE Servel Hermetic sells quickly and steadily—moves right off the salesroom floor and out into homes. Already it has proved its power to turn in a steady succession of sales regardless of local conditions.

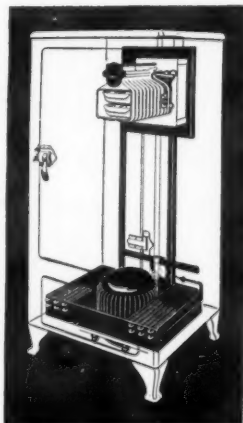
People are eager for the tremendous, every-day convenience of Simplified Refrigeration. They instantly appreciate the clean-cut superiority of a refrigerator as outstanding as this one.

The Servel Hermetic is the simplest electric refrigerator ever produced. It has fewer moving parts. All those parts most likely to cause future trouble have been eliminated entirely. The working unit is hermetically sealed in a permanent bath of oil—putting an end to costly kitchen repairs.

Now your Profits are Safe

You sell this "package job" as a merchant—without any need for a repair shop. No more kitchen repairs, intricate adjustments or replacement of parts. So your business is not burdened by the heavy overhead that has always handicapped dealers in the past.

You can promise your customers "carefree" re-



QUICK FACTS

Hermetically sealed unit . . . No kitchen repairs . . . No intricate adjustments . . . No replacement of parts . . . Fewer moving parts . . . No moving parts exposed . . . Quietest electric refrigerator . . . Handy temperature control . . . More usable shelf space . . . Beautiful, graceful, cabinets . . . Flat, usable top . . . No installation problem . . .

frigeration for the lowest possible cost a day. The Servel Hermetic costs less to operate. And it's the quietest electric refrigerator.

The Servel Dealer Plan offers you profit opportunities never possible before. An electric refrigerator that is an engineering masterpiece—with a list of selling points no other can match. Striking full color pages in the Saturday Evening Post plus powerful newspaper advertisements in your own papers direct scores of interested prospects to your Servel display.

Write now for details of the Plan that insures more profitable business for you!

SERVEL SALES, INC., EVANSVILLE, INDIANA
a complete line of household and commercial refrigerators

\$165⁰⁰ AND UP,
F. O. B. FACTORY

*Your customers will read the next Servel consumers advertisement
in the June 13 Saturday Evening Post. Watch for it!*

The New **SERVEL** *Hermetic*

SIMPLEST ELECTRIC REFRIGERATOR EVER PRODUCED

Ice Cube Man Visits St. Louis



Mr. Ice Cube made his debut at the St. Louis show.

Cleveland League Well Organized

(Concluded from Page 1, Column 4)

of local dealer organizations, an exhibit of electric refrigerators, a series of lectures, and a refrigeration school are being conducted by the league.

Cooperating in these activities are Cleveland representatives of General Electric, Frigidaire, Copeland, Westinghouse, Norge, Apex, Kelvinator, and Majestic organizations. The campaign budget involves an expenditure of approximately \$15,000, of which 50 per cent is contributed by the league, and 50 per cent by the cooperating concerns, who are levied according to their sales volumes.

Beginning with a general meeting of more than 50 executives and sales supervisors from all the electric refrigeration firms in Cleveland, a series of sales "pep" meetings have been held weekly in the League auditorium during this campaign. Every cooperating concern has had its staff down for at least one meeting.

Details of the campaign are explained at these meetings, and the salesmen are afforded the opportunity of seeing the League's exhibit. Prospects are sent to this exhibit.

A display of 24 refrigerators from eight different manufacturers is maintained at all times. Manufacturers' literature is available to the 10,000 or more shoppers who have been visiting this exhibit each month.

During the campaign the League has been running a series of electric refrigeration advertisements in three metropolitan newspapers, 21 foreign language papers, and 18 class publications. Four billboards also carry the "invest in an electric refrigerator" message.

These advertisements carry the names of the manufacturers cooperating with the League on this campaign, as well as their various Cleveland dealers.

Some 250 tire covers, provided by the N. E. L. A. national bureau, are now seen on Cleveland automobiles, 70 special window trims have been put up in dealers' windows, and 50,000 envelope stuffers have found their way into Cleveland homes.

Twice daily, beginning May 18 and continuing until June 13, lectures and demonstrations on "cold cookery" are being given at the League headquarters. Personal invitations are extended to prospects by salesmen, and others are drawn there by newspaper advertising and radio announcements.

At each of these sessions of the "refrigeration school," 20 door prizes are given away. These souvenirs include water bottles, decanters, salt and pepper shakers, glass rolling pins, cookie molds, etc.

Women who attend this school are eligible to participate in an essay contest on the subject, "Why I should invest in an electric refrigerator."

The winner will receive her choice of any one of eight 5 cu. ft. electric refrigerators on the exhibit floor. A recipe book containing 50 recipes for salads, desserts, cold drinks, and left-over dishes, is given to each woman who attends a school session.

The electric refrigerator committee gets together on the first Monday of every month in an elaborately furnished council room. Attendance of this committee at these meetings is usually about 95 per cent, according to Mr. Losby.

Member dealers are: Downtown: Bailey Co., Cushman Refrigeration Co.,

APEX CO. ANNOUNCES 3 YEAR GUARANTEE

CLEVELAND—A three-year guarantee on Apex all-porcelain electric refrigerators is announced by R. J. Strittmatter, vice president in charge of sales for the Apex Rotarex Corp. of this city.

In connection with the announcement, Mr. Strittmatter states, that the same guarantee applies to Wayne all-porcelain refrigerators which the Apex company also manufactures.

KNAPP VISITS NORGE MEN TO PLAN SUMMER DRIVE

(Concluded from Page 1, Column 4)

Cramer-Krasselt Co., Milwaukee, Norge advertising agency.

Distributor meeting programs were in the hands of Norge field representatives: R. L. Wallace, covering the eastern area; T. P. Hallock, southern territory; J. E. Oliphant, east central area; R. E. Densmore, middle western districts.

"Norge shipments for the first five months of 1931," states Mr. Knapp, "are 540 per cent greater than those of the same period last year. Unfilled orders now on hand exceed the total shipments made so far this year. Plans are in progress to step production up 100 per cent to take care of sales increases."

"We are now manufacturing at capacity, running night and day, seven days each week. Our plant has been shut down but two Sundays in the past five months. Plans are in progress to increase production 100 per cent. New machinery is being installed all the time."

"Our factory force has more than doubled since January, and we are adding new workers each week."

Distributors from Albany, Baltimore, Boston, Buffalo, Philadelphia, Pittsburgh, Springfield, Richmond, Rochester, Syracuse and Washington, D. C., met at the Edison Hotel, New York City, May 25.

Distributors from Jacksonville, Little Rock, Memphis, Nashville, Dallas and Knoxville met at the Peabody Hotel, Memphis, May 27.

Distributors from Columbus, Louisville, St. Louis and Charleston met at the St. Nicholas Hotel, Cincinnati, May 28.

Distributors from Cleveland, Denver, Detroit, Duluth, Hastings, Milwaukee, Minneapolis, Waterloo, Grand Rapids and Indianapolis, met at the Stevens Hotel, Chicago, for the final meeting on May 29.

Danforth Refrigeration Co., Frigidaire Sales Corp., Halle Brothers Co., Kelvinator Sales Corp., Kinney & Levan Co., May Co., Meisel Tire Co., Sterling & Welch Co., Wm. Taylor Son & Co., West Side-Elliott Electric Co., Jno. Pfahl Electric Co., Pfahl Electric Co., East Side: Bailey Co., Crystal Electric Co., Doan Electric Co., Enterprise Electric Lighting Fixtures, Inc., Kerber Electric Co., Liberty Electric Co., M. & K. Electric Co.

Lakewood: Bailey Co., Cushman Refrigeration Co., Danforth Refrigeration Co., Frigidaire Sales Corp., I. T. Moyer, Rocky River Hardware Co., Snyder Electric Co.

Cleveland Heights: Cushman Refrigeration Co., Enterprise Electric Lighting Fixtures, Inc., Heights Electric Co., Liberty Electric Co.

AN INDUSTRY'S OLDEST FRIENDSHIP

an appreciation

SEVENTEEN years ago an infant industry joined hands in partnership with another industry, old and firmly established, for the development of a new idea . . . an idea of tremendous and far reaching importance to both of them.

Kelvinator, groping through a murky haze of public indifference regarding the new and little understood electric refrigeration, was laboriously building a market for its product.

A few Central Stations . . . determined to take the future of their own industry into their own hands . . . were pioneering the idea of merchandising power consuming household equipment through departments of their own.

These latter, able and willing to devote time, effort and money to the development of a volume market ten years away, were the first to see that electric refrigeration was the greatest potential builder of domestic load that had yet appeared. They extended a welcoming hand of friendship. Kelvinator, recognizing even then the largest single outlet that would develop for electric refrigeration in years to come, shaped its policies right

from the start in accordance with the advice of Central Station men. The earliest of these policies provided for a direct relationship between the Public Utility and the Kelvinator factory without any intervening step.

So began the industry's oldest friendship.

Those policies, which in the main, were formulated by Central Station Executives years ago, guide Kelvinator's relationship with Public Utilities to-day. The only change has been a continual broadening of the line, and a steady improvement in the product—with the result that Kelvinator has become of more and more assistance to Public Utilities.

Going into the eighteenth year, Kelvinator looks back with pride and looks forward with pleasure to many more mutually pleasant and productive years with Central Stations. (310)

KELVINATOR CORPORATION
14245 Plymouth Road, Detroit, Michigan
Kelvinator of Canada, Ltd., London, Ontario
Kelvinator Limited, London, England



Kelvinator

SERVEL TO PRESENT TWO LARGER MODELS

EVANSVILLE, Ind.—The hermetically sealed Servel Hermetic electric refrigerator will be featured by Servel, Inc., at the N. E. L. A. convention in Atlantic City, June 8 to 12.

Two new models, the seven and nine cu. ft. cabinets will be exhibited for the first time. Production started recently on the larger boxes, making a total of five models offered in the Servel Hermetic line. Three smaller models will also be on display.

In order that spectators may witness the operation of the Servel Hermetic unit, a glass dome will replace the conventional metal "Derby Hat" which completely encloses all moving parts.

In addition, a glass display stand will offer visitors the opportunity of witnessing the operation of the Servel Hermetic unit as it normally rests inside the refrigerator cabinet.

Besides the five models of the Servel Hermetic refrigerator, Servel will also exhibit a few of the 16 models that make up the 1931 line of commercial machines. Water coolers will also be included in the display.

R. E. Peters, assistant sales manager in charge of utility and government business for Servel Sales, Inc., will be among representatives of company attending the convention in Atlantic City.

PHILADELPHIA ELECTRIC STAFF ATTENDS SESSION

PHILADELPHIA—Electric refrigerator merchandising was the principal theme of a meeting of more than 200 members of the sales organization of the Philadelphia Electric Co., held at the Bellevue-Stratford hotel by J. J. Pocock, Frigidaire distributor.

Assistant Manager



R. E. Peters, who is in charge of Servel utility business.

STERLING SPEEDS ORDERS FOR MAJESTIC MACHINES

KANSAS CITY, Mo.—The Sterling Radio Co. reports the receipt of 10 carloads of Majestic refrigerators the second week in May, with a schedule of one carload every second day the remainder of the month.

The 10 carloads of machines were used to fill orders already booked. Two carloads were for new model 140, a 4 cu. ft. box.

New dealers appointed recently by the company are: L. E. Zeiger, Overland Park; A. T. Bare, Albany; Pyle Hardware Co., Liberty, and Durland Saltel Furniture Co., Junction City, Kansas.

MAJESTIC ARRANGES FOR N. E. L. A. SPACE

CHICAGO—"Majestic is now organized to make an effort to interest the utility companies," states Vernon M. Collamore, general sales manager of the Grigsby-Grunow Co., "and we will be represented at Atlantic City, June 8 to 12 with a carefully planned exhibit of our line of three Majestic home refrigerators."

"Not long ago I was able to secure the services of R. H. Brunhouse to have direct charge of our refrigerator sales activities."

"Mr. Brunhouse was formerly sales manager for Merchant & Evans. He will be in charge of our exhibit during the N. E. L. A. convention."

APEX TO EXHIBIT NEW LINE AT ATLANTIC CITY

CLEVELAND—Apex Rotarex Corp. will make its first N. E. L. A. showing of electric refrigerators at the convention and exhibition to be held in Atlantic City, June 8 to 12.

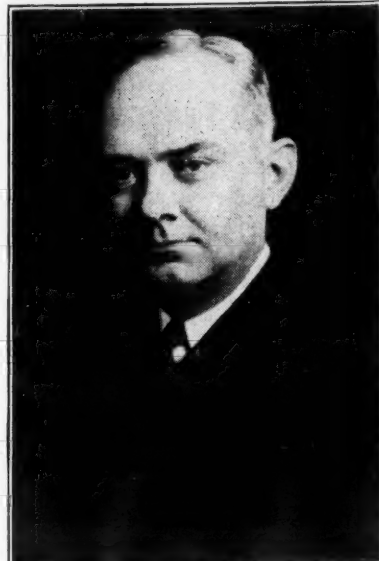
The entire line of Apex appliances will be displayed in booths Nos. 122-124, with special emphasis on the new line of electric refrigerators.

R. J. Strittmatter, vice president in charge of sales for Apex Rotarex, and L. E. LeVee, eastern sales manager, will be in attendance at the company's exhibit.

ICE-O-MATIC NAMES DEALER

SPRINGFIELD, Ill.—Morgan and Sons who operate a furniture store at Seventh and Washington Sts. here, have recently signed as dealer for the Ice-O-Matic refrigerator.

Directs Sales



Campbell Wood, Kelvinator director of utility sales.

KELVINATOR TO MAKE BIG N.E.L.A. DISPLAY

DETROIT—The Kelvinator Corp. will display its products in the big boardwalk auditorium at Atlantic City during the fifty-fourth annual convention of the National Electric Light Association, June 8 to 12, inclusive.

Kelvinator will be represented at the convention by the following officials:

George W. Mason, president; Henry W. Burritt, vice president in charge of sales; J. S. Sayre, sales manager; A. M. Taylor, director of advertising; J. M. Fernald, manager of the commercial division; Campbell Wood, director of utility sales; Vance C. Woodcox, sales promotion manager; L. H. Huntton, sales department; Ray M. Martin, service department, and R. I. Petrie, regional director for the Eastern zone.

Also attending will be E. L. Triffitt and Willard S. French, of Brooke, Smith & French, advertising counsellors for Kelvinator Corp.

The Kelvinator booth will be 60 ft. in length by a depth of 32 ft. from aisle to the back drapes. The domestic cabinets will be arranged on stepped-up platforms, each with model signs enclosed in small silver leaf frames. The steps will be covered with black linoleum faced with antique silver. Pilaster posts will be set up at regular intervals all the way across the booth, between which will run an 85-ft. pleated back drape of blue silk rayon velour, making a background contrasting with the white of the cabinets.

In the background at right and left ends pictures of the Detroit and Grand Rapids plants will be arranged. These will be 5 ft. high by 8 ft. wide and are painted on silk velour. At each end, cut-out figures, 1914-1931, will be arranged in the layout.

Across the booth a sign spelling out Kelvinator in silver cut-out letters is planned. The capital letter K will be 24 in. high, with the small letters 16 in. high. A canopy and end drapes from background to aisle will be in blue silk rayon velour.

Representative models of the complete Kelvinator line will be on display. The domestic models will include: S-4, S-7, Yukon 5 and 7, DeLuxe 6, 8, 11, 14, and 22.

A feature of the display will be a cut-away C-10, chromium plated condensing units enclosed in glass, operating slowly.

Two CW-40 pressure type water coolers will be hooked up and to furnish cool drinking water to thousands who pass by the booth. Other water coolers to be on display include a BW-21, bottle type, in mahogany, and a BW, bottle type, in green. The ice cream cabinets will include a 3-hole portable model and a 4-hole combination model.

Condensing units to be on display are: WR-41, R-31, WF-42, and F-32. Eight dry coils will also be displayed, XO-10, XO-20, XO-40, XO-60, XO-80, XO-100, XO-130 and XO-140.

The Kelvinator booth will be arranged under the direction of Ray M. Martin of the service department, who has charge of Kelvinator exhibits.

CHARLOTTE UTILITY AWARDS PRIZES IN CAMPAIGN

CHARLOTTE, N. C.—Prize money has been awarded to the salesmen of the three divisions of the Southern Public Service Co., which completed a month's campaign resulting in the sale of 1,476 Kelvinators.

Six hundred dollars were distributed by John Paul Lucas, vice president of the company.

The first prizes went to R. H. Watkins of the Charlotte, N. C. division, S. P. U. Co., with 2,312 points; to D. W. Jones of the North Carolina Public Service Co., Burlington, N. C., with 1,717 points; and to B. E. Mills, S. P. U. Co., Belmont, N. C., 771.6. Six prizes were awarded each of the three divisions.

DOHERTY GROUP REPORTS FIRST QUARTER SALES

NEW YORK CITY—During the first quarter of this year, 1,248 domestic and commercial electric refrigerators and 107 gas refrigerators were sold by subsidiary companies of Henry L. Doherty & Co.

The Public Service Co. of Colorado led the member companies in refrigeration sales for the quarter by adding 380 machines to its power lines. Ranking second was the Ohio Public Service Co. with sales of 286 units.

C. T. Day of Toledo and J. L. Spilker of Denver were the leading refrigeration salesmen, turning in orders amounting to \$8,465 and \$6,397, respectively. Twenty-four of the 53 leading salesmen in the first quarter were members of the refrigeration departments of the subsidiary companies.

ST. JOSEPH UTILITY MEN INSPECT MAJESTIC PLANT

ST. JOSEPH, Mo.—The St. Joseph Railway, Light, Heat & Power Co., Majestic dealer, sent 25 salesmen to Chicago for a two days' trip through the Majestic factory.

The contingent was in charge of H. C. Porter, manager of the New Business Department of the company.

H. C. Bonfig, vice president and general manager of the Sterling Radio Co., Kansas City with C. M. Willis, sales manager and George W. Livingstone, territorial representative, accompanied the salesmen on the trip.

The St. Joe group left an order for a carload of the machines. Immediately upon their return a selling campaign was launched, with Porter organizing two "armies," the Blues and the Browns. The commanders are John Bachman, Blues, and Jerry Whitsell, Browns.

All employees of the utility company were drafted to furnish names of prospects with the assurance of a prize of \$2 for each name that resulted in a sale.

Three hundred Majestics have been sold by the group since January.

WESTINGHOUSE STARTS IN PACIFIC COAST AREA

TACOMA, Wash.—Westinghouse refrigerators are now being sold in the Pacific Coast territory by the Robert S. Temme Co. of this city, which recently assumed a dealer's franchise.

With the addition of the Westinghouse line, officials of the company have increased the sales staff from 3 to 10 men.

Use C. I. T. Service and defreeze Your Capital

One thing experience proves... there is more profit to be made by keeping your capital liquid than by letting it become frozen in long term paper.

The dealer who can't make a satisfactory profit out of selling refrigerators isn't likely to find gold in a side-line business of banking his customers.

Selling is a full time job... yours. Financing is a different one... ours. The whole aim of C. I. T. Refrigerator Financing Service is to relieve the dealer of credit burden and work so that the sales he makes on instalment terms will yield him as much net profit—everything considered—as his cash sales.

This complete C. I. T. Service is offered you through our office in your territory. There you will find trained finance men who will check credits, buy paper, make collections, and attend to every detail of your term business, quickly and efficiently.

C. I. T. Financing Plans cover all models of all approved makes of mechanical refrigerators. Costs are uniformly low, due to our great volume of business. The capital strength and past record of the C. I. T. institution is a guarantee of absolute dependability.



THESE C. I. T. LOCAL OFFICES WILL WELCOME YOUR INQUIRY

Abilene - Akron - Albany - Allentown - Altoona - Amarillo
Asbury Park - Atlanta - Augusta - Baltimore - Beckley - Binghamton
Birmingham - Bloomington - Bluefield - Boise - Boston - Bristol
Bronx - Brooklyn - Buffalo - Butte - Camden - Charleston - Charlotte
Chicago - Cincinnati - Clarksburg - Cleveland - Columbia - Columbus
Dallas - Davenport - Dayton - Denver - Des Moines - Detroit - El Paso
Erie - Fort Wayne - Fort Worth - Fresno - Glens Falls - Grand Rapids
Green Bay - Greensboro - Greenville - Hagerstown
Harrisburg - Hartford - Hempstead - Hickory - Houston - Huntington
Indianapolis - Jackson - Jacksonville - Jamaica - Jamestown - Jersey City
Kansas City - Kenosha - Knoxville - Lansing - Lexington - Lincoln
Little Rock - Los Angeles - Louisville - Madison - Manchester
Memphis - Miami - Milwaukee - Minneapolis - Minot - Montgomery
Montpelier - Mt. Vernon - Nashville - Newark - New Haven
New Orleans - New York - Norfolk - Oklahoma City - Omaha
Orlando - Philadelphia - Phoenix - Pittsburgh - Portland, Me.
Portland, Ore. - Poughkeepsie - Providence - Raleigh - Reading
Reno - Richmond - Roanoke - Rochester - Sacramento - St. George
St. Louis - Salt Lake City - San Antonio - San Diego - San Francisco
San Jose - Seattle - Sioux Falls - South Bend - Spokane - Springfield
Spring Valley - Stockton - Syracuse - Tampa - Toledo - Tucson - Tulsa
Utica - Washington - Wheeling - White Plains - Wichita - Wilkes-Barre
Youngstown.

C.I.T. CORPORATION

ONE PARK AVENUE, NEW YORK

A Unit of

COMMERCIAL INVESTMENT TRUST CORPORATION
CAPITAL AND SURPLUS OVER \$90,000,000

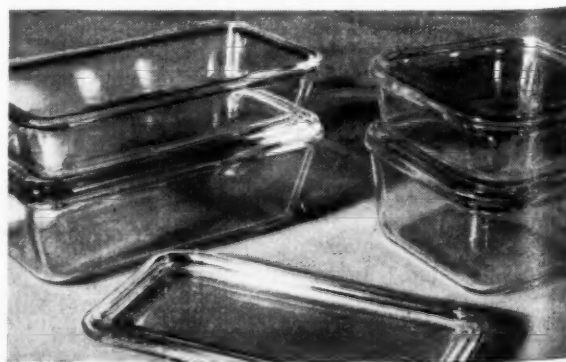
Subsidiary and Affiliated Operating Companies with Head Offices in New York
Chicago - San Francisco - Toronto - London - Berlin - Brussels - Paris
Copenhagen - Havana - San Juan, P. R. - Mexico City - Buenos Aires
Sao Paulo - Sydney, Australia - Offices in more than 160 cities.

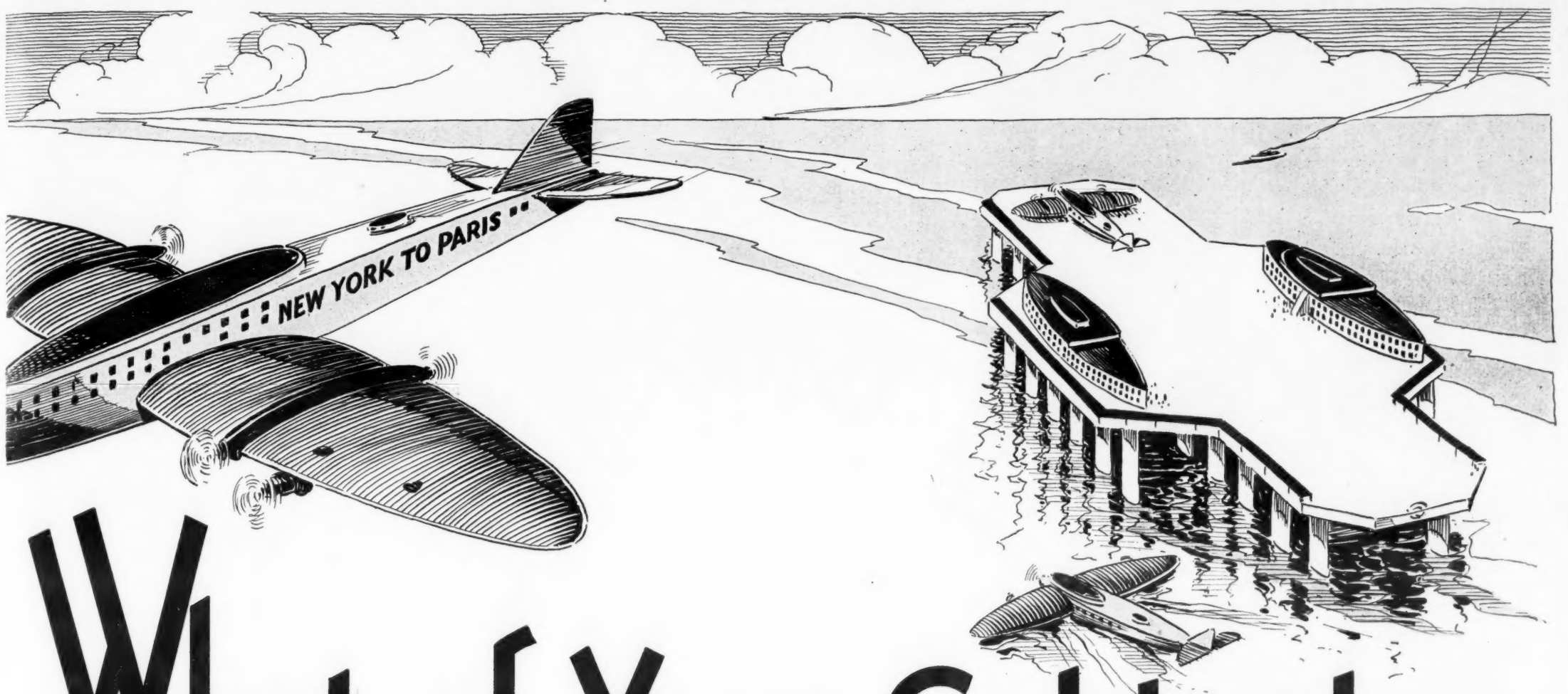
Swing the sale . . . build good will with PYREX REFRIGERATOR DISHES

LITTLE added features often carry great weight in the final decision to buy . . . always make a favorable impression on prospective customers. ● Pyrex Refrigerator Dishes add a convenience to the refrigerator that women appreciate. Made of the famous Pyrex heat-resistant glass, these dishes do triple duty . . . they may be used for baking, serving and refrigerating. Their ability to stack saves refrigerator space. ● Single dishes retail for as little as 85c . . . set of four, different sizes \$4.40. ● Get Pyrex Refrigerator Dishes from your jobber . . . or write to Corning Glass Works, Corning, New York.

PYREX REFRIGERATOR DISHES

Trade-mark "Pyrex"
Reg. U. S. Pat. Off.





What of Your Cabinet—

When Europe is as close as tomorrow?

When new measures of time and space are standard . . . when London is no farther away than breakfast . . . when today's efficiency brings a smile from a new generation . . . what about your refrigerator cabinet—the pride of 1931?

Does it still guard dependably the perishables on its shelves, does it still deliver the second batch of ice cubes in record time, DOES IT STILL OPERATE WITH 1931 ECONOMY?

You may be sure YOUR cabinets will maintain that same high efficiency in the years to come, when Dry-Zero Pliable Slabs are in the walls to keep out the heat of the kitchen where it's summer all year round. Dry-Zero is the life-time insulation. It will not disintegrate, settle or crack, it has a unique aversion to moisture, it has the highest efficiency of any commercial insulation. Impartial authorities say so!

No matter what marvels the next decade brings forth, Dry-Zero insulated refrigerators will still be making records for efficiency, will still be earning good will and more satisfied customers.

DRY-ZERO CORPORATION

Merchandise Mart - Chicago, Illinois

Canadian Office - 465 Parliament Place, Toronto

DRY-ZERO

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

CHARLESTON UTILITY STARTS BIG CAMPAIGN

CHARLESTON, S. C. — The South Carolina Power Co. electric refrigeration drive, known as the "Hit The Ball" campaign, is now in full swing. It opened April 27 and will continue until June 27.

With each G. E. refrigerator sold, the company is awarding a bridge table cover and a set of five glass dishes for use in the refrigerator. The terms are \$10.00 down and the balance in 30 months, for domestic models, and 10 per cent with order, 10 per cent on delivery and balance in 18 months for commercial models.

The campaign is being conducted as a baseball contest with a separate set-up for the City of Charleston and one for the other districts. Each office is furnished with a chart showing the quota by the week and posted daily to show the progress of the campaign.

Rules for scoring are as follows: 100 per cent or 1,300 points a home run; 75 per cent of quota or 975 points a three-bagger; and 50 per cent of quota or 650 points a two-bagger. Three prizes amounting to \$10.50 to individuals apply to each week of the campaign and checks are awarded weekly to winning salesmen. At the close of the campaign \$10.00 prize goes to the player scoring the most home runs; \$7.50 to the player scoring the most hits and \$5.00 to the player having the highest daily average during the entire campaign.

In Charleston, a league has been formed from the five Employee Divisions. This league is known as "The South Carolina Power National League."

Each team has a quota of 10 refrigerators. This quota is entirely separate and distinct from the quota of salesman that is assigned to a division. Sales made by salesman to prospects that were not turned in by the members will not be credited on the division quota.

Division prizes are as follows: \$10.00

Manager



George S. Jones, Jr., manager of the Frigidaire public utilities division.

to the division selling the greatest per cent in excess of quota and \$7.50 to the division selling the second greatest per cent in excess of quota.

These prizes are based on sales made from "tips" turned in by division members that are actually sold and awarded to those employees turning in tips resulting in sales. Each team member is paid a commission for each "tip" turned in that resulted in a sale, provided the "tip" is not already on record in the merchandise division.

The district teams constitute a separate league. A \$10.00 prize is given to the team captain selling the greatest per cent in excess of quota, and \$7.50 to the team captain selling the second greatest per cent in excess of quota.

FRIGIDAIRE EXHIBIT TO BE GARDEN SCENE

DAYTON, Ohio—An exhibit designed to serve as a meeting and resting place for visitors as well as a display for electric refrigeration products will be constructed by Frigidaire Corp. in the Atlantic City Auditorium for the annual convention of the National Electric Light Association, E. D. Doty, advertising manager of Frigidaire Corp., announced.

The Frigidaire exhibit this year, Mr. Doty explained, will take the form of a cool country garden, and landscape architects practically will transplant a natural garden to obtain the desired effect.

Comfortable chairs and lounges will be arranged on cool stone terraces for the convenience of visitors to the N. E. L. A. meeting. A general invitation to the utility men to visit the exhibit will be flashed nightly in Atlantic City's sky from a huge motograph machine.

Along each side of the large Frigidaire exhibit, which will be erected to the right of the entrance of the auditorium, will be displayed the eight models in the new Frigidaire line. Along the back wall will be a commercial exhibit.

Visiting utility representatives will be invited to Frigidaire's permanent exhibit on Steel Pier.

WOODCOX SPEAKS AT DETROIT ADCRAFT MEETING

DETROIT—Vance C. Woodcox, Kelvinator sales promotion manager, addressed the luncheon meeting of the Detroit Adcraft Club, held in the auditorium of the General Motors Bldg., May 22. Mr. Woodcox spoke on Kelvinator methods of sales promotion.

Westinghouse Takes Exhibition Space

MANSFIELD, Ohio—The first display of Westinghouse electric refrigerators before an N. E. L. A. convention will be made next week at the Atlantic City Convention Hall. The exhibit will consist of the various DeLux models, the 4 1/4 cu. ft. apartment house refrigerator and a new water cooler which has just been announced.

The DeLux models of refrigerators, similar to the line offered last year, have one change in model, an 18 cu. ft. 4-door model replacing a 17 ft. 3-door cabinet. Black micarta door and cabinet trim strips have been added and each DeLux refrigerator has an electric light actuated by opening the refrigerator door. The Westinghouse Automatic Froster with its refrigeration holdover is retained in the DeLux models. These refrigerators are offered in both porcelain and lacquer exterior finishes.

The WT-501 Water Cooler is a moderate priced hermetically sealed unit incorporating a special pre-cooling feature and is provided with an automatic pressure regulating valve. This water cooler is designed for general office or small plant use where a five-gallon full capacity cooler can be depended on for sufficient cooled water. It is supplied with a bubbler and a glass filler.

An interesting feature of the Westinghouse refrigerator exhibit will be novel lighting. By playing a small keyboard similar to an organ console, visitors to the booth will be able to illuminate one of the refrigerators with various colors and intensities of light.

Westinghouse executives who will be at the refrigeration display are: C. E. Allen, commercial vice president in charge of merchandise sales; M. C. Morrow, merchandise sales manager; C. D. Taylor, assistant merchandise sales manager; H. A. D'Arcy, in charge of refrigeration utility sales; Marshall Adams, merchandise sales promotion manager, and Miss Alice McCarren, director of home economics.

Willie Vocalite, the new Westinghouse robot, who has introduced Westinghouse refrigerators in several large cities, will also be present. His peculiar abilities, such as standing, sitting, talking and operating Westinghouse devices will be demonstrated each morning and afternoon between meetings.

SOUTHERN UTILITY ACQUIRES MUNICIPAL SYSTEMS

RUTHERFORDTON, N. C.—Municipally-owned systems for electricity distribution and electrical appliance merchandising in Rutherfordton and Spindale, two cities in the North Carolina isothermal belt, have been sold to the Southern Public Utilities Co.

In Rutherfordton, a location at 106 N. Main St., has been remodeled as an office and store for the sale of Kelvinators and other electrical appliances.

Following the policy of the Southern Public Utilities Co., both new branches will have a strictly local personnel. J. R. Anderson, former manager of the water and light department of the city of Rutherfordton, and Gerald Lipscomb, holding the corresponding position in Spindale, will be retained as managers in their respective cities.

UTILITY CAMPAIGNS ESTABLISH RECORDS

By Fred E. Bollmeyer
G. E. Refrigeration Dept.

THE campaign of the National Electric Light Association, Electric Refrigeration Bureau, to sell 1,000,000 electric refrigerators in 1931 will be achieved beyond 100 per cent, according to present indications.

Virtually every member utility, working hand and hand with dealers in their respective territories, is holding a sales contest. Georgia Power Co., which for the past two years has staged successful sales drives, each amounting to more than \$1,000,000, is already hovering around that figure in a 60-day campaign.

The American Gas & Electric Co. sold 1,501 General Electric refrigerators in April, 197 per cent of quota. The Puget Sound Power & Light, the Eastern Shore Public Service, Pennsylvania Power & Light, New York Power & Light, Ohio Power, Ohio Public Service, Niag-



H. H. Bosworth, General Electric central station manager.

ara-Hudson, the southern group of the Illinois Power & Light, are all setting sales records.

During April employees of the utilities purchased 126 electric refrigerators, and in the first six weeks of the utilities' campaign, 13 carloads of refrigerators were ordered from the General Electric Co.

In connection with the campaigns of the various utilities, home service demonstrations were held and instructive lectures were given in all parts of the nation.

Just prior to the beginning of the various campaigns, H. H. Bosworth, central stations manager for the General Electric Co. Refrigeration Department, announced the result of his analysis of successful central station operations, following an intensive survey of the operation of nearly 100 leading utilities in the country.

Some of the major factors in successful operation were outlined by Manager Bosworth as follows:

"Our analysis has shown that in almost every outstanding operation the central station has an electric refrigeration department with good displays and a definite sales program with set quotas. In each case one man has been especially assigned for each 60 units of quota.

"Well trained salesmen, too, are a necessity, as are also supervisors and product men. Most of the men filling this requisite are men who have taken full advantage of the manufacturer's training courses, sales schools and distributor's facilities.

"Sales activities in all seasons of the year, featuring spring, fall, and Christmas sales campaigns, are parts of the programs followed by the central stations which are outstanding successes in the electric refrigeration field. In every instance these sales activities have included a campaign for sales to employees.

"A substantial budget for newspaper advertising, outdoor advertising, direct mail, window service, door trims, and sales training should carry not less than 3 per cent of the expected gross business in dollars.

"A carefully selected prospect list, basing each unit of quota on four live prospects has proved successful.

"Perhaps the most important of the major factors dealing with successful central station operations is that of attractive terms for purchasers of electric refrigerators, regardless of make."

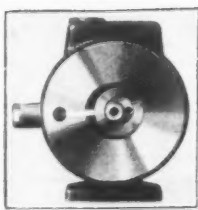
DRUG STORE SELLS MAJESTIC, NORGE REFRIGERATORS

CINCINNATI (UTPS)—Refrigerators can be purchased at Dow's new drug store which opened recently in the old Mabley and Carew Bldg., at Fifth and Walnut Sts.

In addition to the stock of radios, drugs, perfumes, etc., Dow's sell in the basement store a line of Norge and Majestic refrigerators, washing machines, vacuum cleaners, kitchen ware, small rugs, etc.

EIGHT factors for PROFIT with NORGE

the electric refrigerator with the ROLLATOR

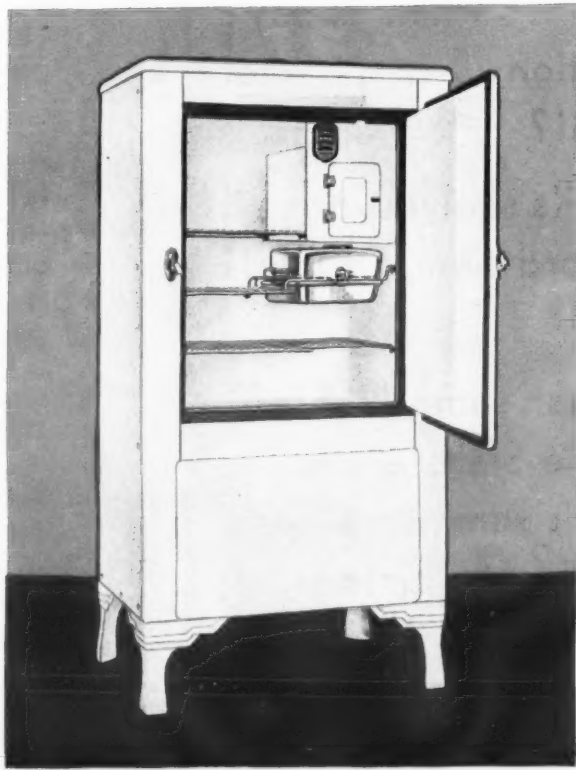


The Norge Dealer employs no skilled service staff... that part of usual operating expense becomes profit with Norge.

To just uncrate and plug in is a complete Norge installation... Norge is package merchandise and there are no refrigerator builders or mechanics on the Dealer payroll.

There are three standard Norge models (with specials and water coolers available)... it's a short line. The Norge dealer carries a low inventory with replacement stocks quickly obtainable.

A wholesome clean cut merchandising plan is operating for Norge and an effective advertising program is making



this highly salable refrigerator a rapid turnover product.

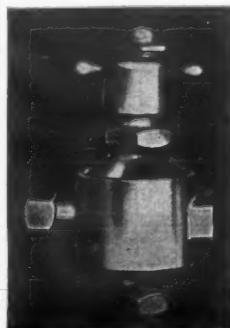
Dealers who investigate the Norge find not only these factors for profit but, also, unusually favorable discounts.

NORGE CORPORATION Division of BORG-WARNER
658 East Woodbridge Street Detroit, Michigan

IN CANADA
NORGE CORPORATION OF CANADA, Ltd., 235 CARLAW AVE.
TORONTO, ONTARIO, CANADA

NORGE WITH ROLLATOR

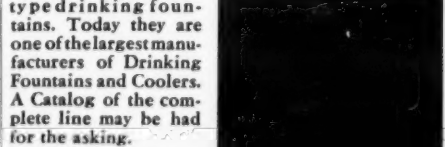
"EBCO" AUTOMATIC SELF-CLOSING STREAM CONTROL VALVES



Exposed Type C-1300

The Ebinger Co., pioneered in developing and perfecting the Automatic Stream Control Valve and Bubbler type drinking fountains. Today they are one of the largest manufacturers of Drinking Fountains and Coolers. A Catalog of the complete line may be had for the asking.

Below—Regulator for installation in water supply lines to prevent fountains 3-8 in. I. P. Inlet and Outlet.



WRITE FOR CATALOG "S"

THE D. A. EBINGER SANITARY MFG. CO.
COLUMBUS, OHIO

Manufacturers of EBCO Drinking Fountains, Ventilated Urinals and Closets, Round Wash Sinks and Steel Compartments for toilet rooms.

Save Water.
Eliminate Squirting.
Control height of stream automatically under all fluctuating pressures between 20 and 120 pounds.



ADVANCED
REFRIGERATION

DEMONSTRATING THE VALUE OF A SALES FRANCHISE

In January of this year we announced through these pages that plans were under way which would make the Frigidaire franchise more valuable than ever

before. ★ ★ ★ The advertisements reproduced above are typical of those which have appeared from time to time in newspapers throughout the country, showing the results of these plans. ★ ★ ★ And the end is not yet. ★ ★ ★ The choice everywhere is Frigidaire, and the sales opportunity for Frigidaire dealers today is the greatest in Frigidaire history.

FRIGIDAIRE CORPORATION, SUBSIDIARY OF GENERAL MOTORS CORPORATION, DAYTON, OHIO

★ Visit the Frigidaire exhibit while at the
N.E.L.A. Convention at Atlantic City June 8-12.

FRIGIDAIRE

A GENERAL MOTORS VALUE

THE NEW ALL WHITE PORCELAIN-ON-STEEL FRIGIDAIRE'S ARE SOLD WITH A THREE-YEAR COMPLETE GUARANTEE

BOHN PIONEERED THE PORCELAIN REFRIGERATOR

This is but one of the many advances pioneered by the BOHN engineers during thirty-five years of quality manufacturing.

BOHN has built thousands of cabinets for manufacturers of refrigerating machines who desired the utmost in beautiful and scientific construction to best set forth their mechanism.

BOHN would be glad to figure with those organizations who recognize that a quality all-porcelain refrigerator is a distinct merchandising asset.

BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Write for details of low prices now prevailing on stock models.

Buffalo Refrigeration Show Draws 50,000 Spectators



An interesting feature of the Buffalo show was the Kelvinator used on Admiral Byrd's Antarctic Expedition.

DANBURY CO. ADDS MAJESTICS

DANBURY, Conn.—Pauli Brothers have been appointed agents in this city for the Majestic electric refrigerator. George W. Pauli, Jr., will manage the department.

TWELVE MAKES DISPLAYED IN ANTARCTIC SETTING

By Jean C. Turner

BUFFALO—Admiral Byrd's Antarctic expedition equipment, polar specimens, penguins, icicles, trail-markers and northern lights transformed the main floor of the Electric Building, Genesee, Huron and Washington Sts., into a veritable Little America which attracted between 50,000 and 60,000 spectators during the week of May 10.

The occasion was the first Electric Refrigeration and Antarctic Exposition ever held in this city.

It was sponsored by the Buffalo Electric Refrigeration Bureau comprised of representatives of the following distributors: H. B. Alderman, H. B. Alderman Co. (Leonard); S. J. Bergman, Bergman Hardware Co. (Norge); M. O. Grinnell, Buffalo Talking Machine Co. (Servel); W. W. Oliver, W. A. Case & Sons (Mayflower); L. L. Bohman, Copeland Distributing Corp.; F. W. Wolf, Erco, Inc. (General Electric); R. F. Garrod, Apex Electrical Mfg. Co.; E. C. Cockrane, Kelvinator Buffalo Corp.; C. J. Pagel, Majestic Distributors; J. R. Andrews, McCarthy Bros. & Ford (Westinghouse); W. J. Swyers, National Refrigeration Corp. (Frigidaire); G. C. Strauss, Joseph Strauss Co., Inc. (Mohawk).

Details of the show were handled by George J. Reichert, Buffalo General Electric Co., who was general chairman and director, Samuel S. Vineberg, secretary of the Electrical League of the Niagara Frontier, and a committee made up of representatives from each of the manufacturers and distributors.

Twelve makes of refrigerators were displayed uniformly in 12 open display booths, each make being given one booth. Distributors' representatives were in attendance at these booths and gave out advertising pamphlets and refrigeration information. A placard over each display bore the name of the refrigerator, distributor and all city dealers.

Throughout the week the building's six display windows were devoted exclusively to showing latest models and makes of electric refrigerators. Just as

with the interior arrangement, the various makes were uniformly displayed, two to each window.

Each window was centered with an official photograph of the Byrd expedition and a poster announcing the show; penguins and trail-markers added life and color. The same Antarctic background, depicting a dog sled travelling across the snow amid northern lights, was used in every window.

Educational work was conducted at three demonstrations daily at 2:30 p. m., 4 p. m. and 8 p. m. Expert chefs and medical authorities presided at these demonstrations. Special demonstrations were held each afternoon on the mezzanine floor for women's club members.

Among the interesting exhibits noted at Antarctica were: specimens brought back by Eagle Scout Paul Siple, the Erie, Pa., Boy Scout who accompanied the Byrd expedition to the South Pole; trophies awarded Siple; clothing worn by the explorers; trinkets of South Sea Islanders; teeth of whales captured in Antarctica; reindeer and seal pelts; bits of coral and other curios.

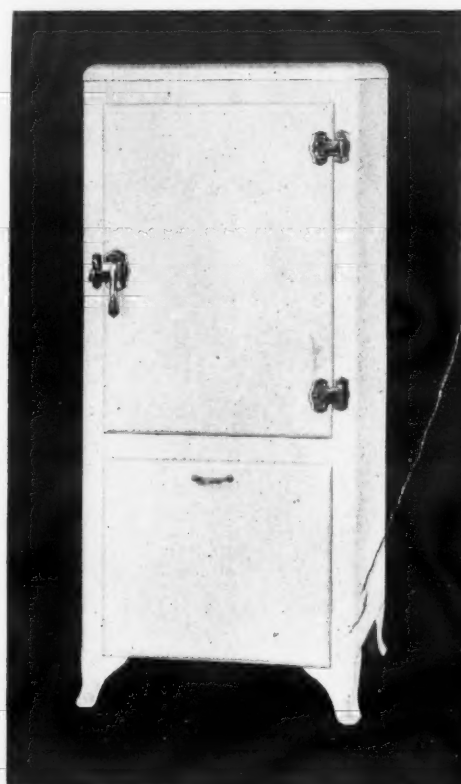
Of especial interest were two plaster replicas of Little America, Byrd's Antarctic base, each accurately modelled to scale and complete in every detail and mounted atop tables just inside each entrance to the show; and a display of the Kelvinator that was part of Byrd's equipment, side by side with one of the newest models.

Trail-markers, similar to those used by the Byrd explorers, guided the visitors through the exposition. The column and plaster lighting that features the main floor was transformed for this event into vari-colored rays to achieve northern light effects.

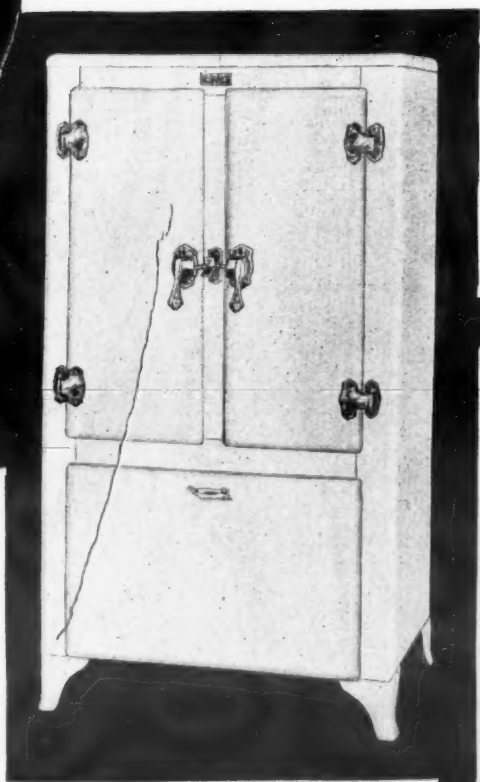
The show was advertised in the following ways: Boy Scouts who gathered at a local theater, the week before the show, to meet Paul Siple, were given buttons inviting them to come to the exposition and see equipment and curiosities collected by Siple; all the local newspapers carried advertisements and a special section of nine pages appeared in one of the papers, devoted entirely to the show; posters were placed in shop windows throughout the city; announcements of the show were given over the radio and tire covers donated to anyone who wished them.

STARR FREEZE ELECTRIC REFRIGERATION

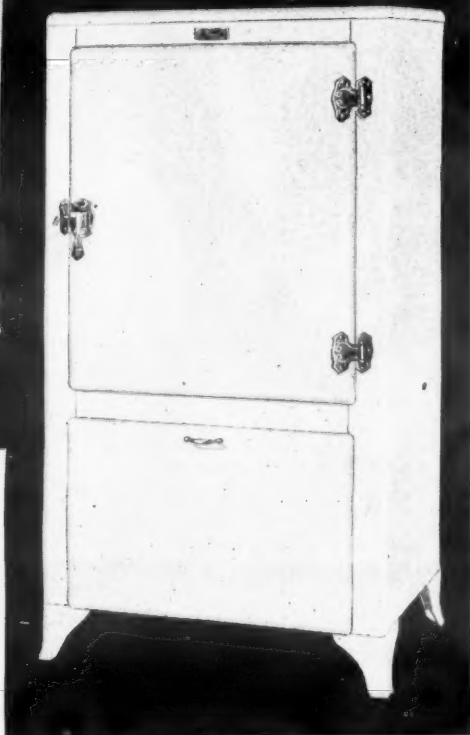
Models
for 1931



STYLE W



STYLE O



STYLE M

Unequalled in
Simplicity . . .
Efficiency . . .
Dependability
Quality . . .

**On
Display..**

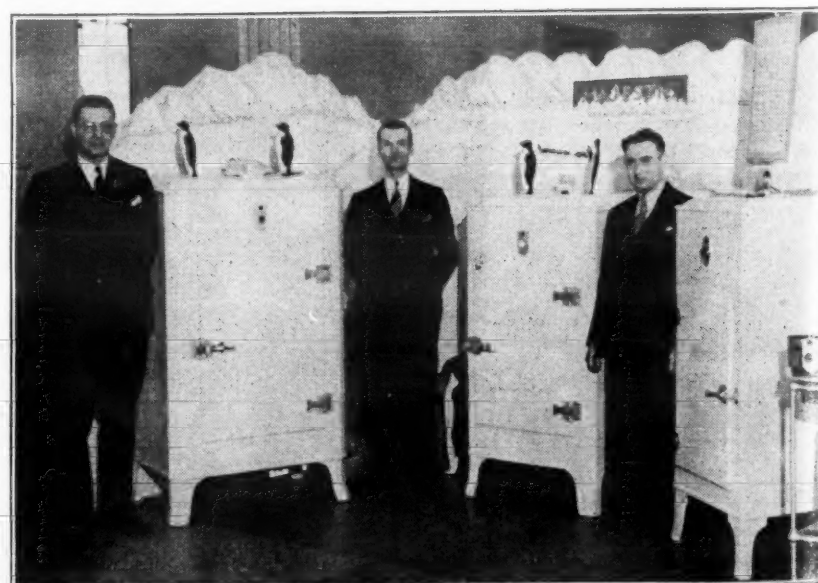
**STARR
FREEZE**
*Electrical
Refrigeration*

During the Radio Trade Show and
Music Industries Show at the
Stevens Hotel, June 8-12, 1931.

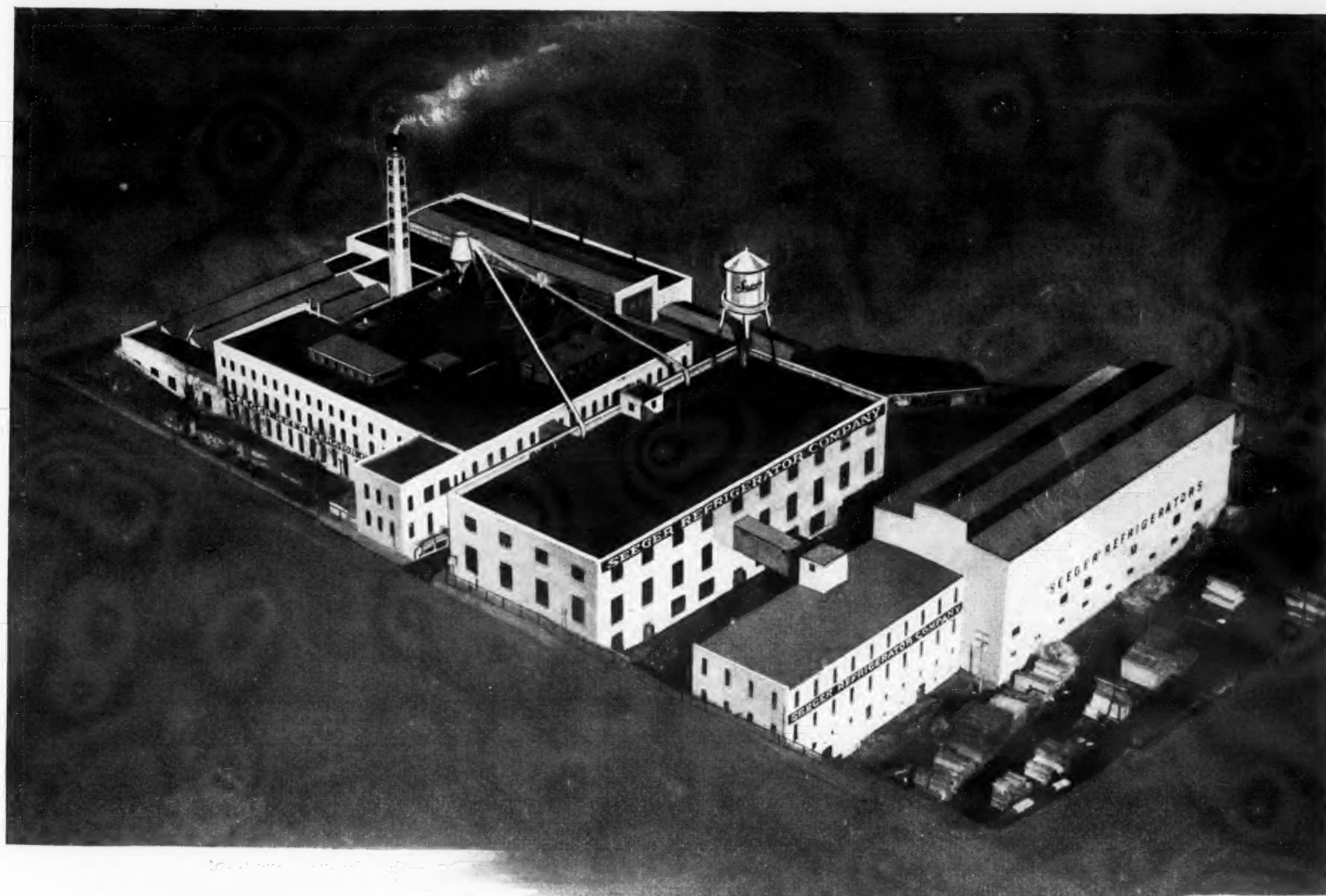
We cordially invite you to inspect our 1931 models which offer the latest in style, sales features and genuine distinctiveness.

THE STARR COMPANY
RICHMOND - - - INDIANA

On Duty at Majestic Booth



Three officials of Majestic Wholesalers, Inc., on duty at the company's booth at the Buffalo Refrigeration Show and Antarctica Exposition. Pictured here (left to right) are: C. J. Pagel, general manager; Harold Kelley, sales promotion manager; and B. L. Kulick, refrigeration sales manager.



CONGRATULATIONS BY

Seeger

SAINT PAUL

The Seeger Refrigerator Company, during June 8th, 9th, 10th, 11th, 12th, 1931 session of the N.E.L.A. Convention, wishes to take this opportunity to congratulate the Electric Light and Power Industry on their Successful Campaign "Invest in an Electric Refrigerator."

SEEGER REFRIGERATOR COMPANY

Madison Ave.,
Between 46th and 47th Sts.
NEW YORK, N. Y.

655-57 So. La Brea Ave.
LOS ANGELES, CAL.

Statler Building
BOSTON, MASS.

660 North Wabash
CHICAGO, ILL.

MERCHANDISING SECTION ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

Published Every Two Weeks by

BUSINESS NEWS PUBLISHING CO.

550 Maccaabees Building, Woodward Ave. and Putnam St.
Detroit, Michigan. Telephones: Columbia 4242-4243-4244

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Editorial Aims of the News

To encourage the development of the art.

To promote ethical practices in the business.

To foster friendly relations throughout the industry.

To provide a clearing house for new methods and ideas.

To broadcast the technical, commercial and personal news of the field.

Merchandising Policy

WHEN European industrialists come to the United States to investigate mass production methods they quickly realize that the success of the system is not entirely a matter of conveyor assembly lines and specialized tasks for workmen. Production machinery and production methods are only part of the answer. The European manufacturer might adopt outright both machinery and methods and be unable to duplicate the results. He would still lack the enormous American market.

Mass selling goes hand in hand with mass production. It is of no avail to produce something on a large scale if it cannot also be sold on a large scale. Training the American public to buy standardized goods according to standardized rules was just as important an accomplishment as the designing of an automatic machine which would wrap a standardized product in a standardized package.

(Lately the American public has found itself rather fed up on certain items of merchandise which have been good sellers for a long time. The public has not rebelled against mass production, but there are indications that the consumer would like to see something new in the store display windows and on the shelves. New items of quality merchandise, properly advertised, attractively displayed and intelligently sold are finding plenty of buyers. Electric refrigerators are a good example.)

Formula Not Simple

To return to the problem of mass selling, the European investigator will discover (if he studies the subject long enough), that the answer does not consist entirely of a schedule of full-page advertisements in a mass circulation magazine. A good many manufacturing executives, born and raised right here in the U. S. A., have discovered that the formula for successful merchandising is not so simple.

Even the typical, top-notch, high-pressure sales executive, with one or more outstanding merchandising records to his credit, frequently hits a snag when he attempts to apply his tested recipe to an electrical appliance. The plans which worked beautifully for typewriters, sewing machines or automobiles go haywire when applied to a device which must have a black cord with a little plug on the end of it.

In every text book on "How to Be a Sales Manager," is a nice fan-shaped chart showing the flow of goods from manufacturer to distributor, to dealer, to consumer. Every sales manager has it in his treasured loose-leaf black leather book. In

the same book, neatly typed or possibly printed, is his "merchandising policy." When he leaves the scene of his recent triumph to take a bigger and better job with a bigger and better company, the black leather book goes with him, for therein is written his formula for success. Confidently he takes possession of his new desk knowing that it will be necessary only to revise a few words and figures in order to repeat the performance.

Public Utilities

The trouble with the chart, when it comes to merchandising an electrical appliance, is that it does not have a rectangle or circle denoting the public utility. Gradually it dawns upon him that there is something missing in the picture.

The sales manager may have no great difficulty in mastering the variations in his market so far as the different kinds of electrical power are concerned. He soon learns about direct and alternating current, 25 and 60 cycles, 110 and 220 volts, etc. Fortunately most of the electrical service in the United States is fairly well standardized, and anyway that is a problem for the factory to worry about. But when he begins to delve into the merchandising policies of public utility companies, furrows appear in his brow and his barber begins to suggest remedies for grey hair or baldness.

His knowledge of the situation in New York or Chicago is of little help to him when he goes to Cleveland or Detroit. What he has learned in New England will not work on the Pacific Coast.

Variations in Policies

Some utilities have an aggressive merchandising policy, using every fair means of getting business and, in certain instances, using methods which dealers claim are not fair at all. Other utilities adopt a milder course, giving much attention to educational displays and demonstrations, taking the burden of pioneering new appliances, but avoiding active competition with the independent dealers. A few utilities entirely abstain from the actual sale of appliances, but cooperate actively with the local trade in market development programs. Still another type of utility is that which does practically nothing to build its market, leaving the job to whoever cares to do it.

This wide variation in public utility policies represents the principal reason why it is impossible to lay down a rule which will apply nationally. It is one of the complications in the marketing of electrical appliances, one of the obstacles to the smooth operation of a mass selling plan.

GLEANINGS FROM RECENT PERIODICALS

SOME companies go through fire and water for an advertising idea. Other companies, like the Bohn Refrigerator Co., reverse the process and have their advertising ideas come to them through fire and water.

At least so one would judge from a window display which the Schoolmaster noticed while walking about town. In the window of the Bohn Refrigerator Shop, in New York, there stands a burnt and battered refrigerator, charred and water-splashed. Below it, on a card, is printed the following story:

This refrigerator was iced to its capacity, 150 lbs. on Saturday morning at nine o'clock. Beginning that day at 2 P. M. fire gutted the Exclusive Lunch Club, 17 Broad Street, and everything in the kitchen was burned. This Bohn refrigerator was a mass of flames yet when it was opened on Monday morning, two days after the fire, the refrigerator still contained over 90 lbs. of ice. The butter was hard, the milk cold and fresh and nothing in the refrigerator was spoiled. The Bohn refrigerator kept out heat!

The card then goes on to moralize about the superior quality of Bohn refrigerators which helped it withstand the ravages of heat. Without intending to instigate similar conflagrations for advertising purposes, the Schoolmaster feels that this refrigerator made a rather unusual and effective window display.—The Little Schoolmaster' Column, *Printers' Ink*.

THE solution of the public relations problem of the industry hinges upon the adoption of a program that need be no more vigorous or effective than that which sold the electrical idea to a hesitant and skeptical investing public at a time when funds for expansion were as imperative as friendly relations are today. The story was told well in one form then and it can be told well in another form now. The task rests in deciding upon those to be reached, the channels by which they are to be reached and what shall be delivered over the chosen channels. The customer is the most important person to appeal to and the local channels of approach are the most promising in effectiveness. Likewise, the material of the program can most profitably be the facts which will confirm and enhance the present general local satisfaction of the customer with the service he is, perhaps unawardedly, receiving.—*Electrical World*, May 30, 1931.

Letters from Readers

Starr Broadcasts

RICHMOND, Ind.

Editor:

I thought you might be interested in the attached clipping taken from the "Starr Dealer Advertising Helps" catalog. As you know, the Starr Co. has been recording in its Gennett record division electrical transcription records for broadcasting purposes (these being made up for other manufacturer trade generally, covering any product), in addition to the large line of regular commercial phonograph records that we have made for a number of years.

The refrigerator division has secured the services of the record division and prepared the series of broadcast records in order that our dealers and jobbers may go direct to their customers and prospects with the Starr-Freezer message. The records are available to Starr dealers without cost.

The "Dealer Helps" also include phonograph books, tire covers, electric window signs, road signs, letterheads, etc.

If I am not mistaken, I believe we are the first to make it possible for the electric refrigerator dealer to present a radio program of first-class advertising importance to him directly, a program of dignity, appealing to the public, and one that is supplying useful information to the housewife.

I am glad to say that we are enjoying a heavy volume of business on the Starr-Freezer line. During April our orders increased to a very gratifying high volume and during the month of May, to date, they have tripled themselves over April. So far as I can see, there is no indication of a let-up.

As a matter of fact, I am convinced that the demand and sales for electric refrigeration this season will extend many weeks beyond what has heretofore been termed the normal refrigerator peak sales period.

I would predict that shortly electric refrigeration will be sold every month in the year, having a tendency to minimize the normal sales peak. That should be the case, and if all manufacturers and sales organizations get behind it as they should, there is no question but that that end will be accomplished.

We have more than doubled our production up to May 1, and with the continuation of the 24-hour schedule that we have been maintaining and the increase in production which we anticipate shortly as a result of the large amount of new production equipment which has been installed here during the last few weeks, we expect not only to continue to care for our present outlets, but to also continue the expansion of our distributing organization.

H. J. WIGGANS,
Manager, Refrigerator
Division, The Starr Co.

A Human Document

PHILADELPHIA, Pa.

Publisher:

For a number of years I was a chemist for our local gas company. I left them to go into a chemical plant, which decision did not turn out to my advantage, and I was out of a job. I saw an electric refrigeration sign hanging in front of a store in Philadelphia and I went in, and was hired. This was in 1926.

I immediately saw the possibilities of electric refrigeration, and thought I had a lifelong job with a new idea which was full of advantages and possibilities. I was keenly interested in installations, and for a fellow who had worked as a chemist all his life, to go out with a kit of tools was quite an experience. But I kept my eyes and ears open, saw how to put in better and quicker installations.

I made suggestions which would have saved hundreds of dollars, but the head of the department was either not on the job or was too dumb, and would not put my suggestions into practice, till months afterward. Then they were put out of use by the new national code.

I still thought the electric refrigeration game was here to stay, and for a fellow with a chemical knowledge, and also handy and neat with tools, there was still an opportunity for bigger things; and an excellent chance for a fellow who was always on the outlook for new ideas to put into effect.

Well, the slump in business came and nearly all the men were laid off but me; and then to my surprise my salary was cut way down, and then I knew my services were not appreciated as much as I thought they should have been.

I then saw if business got worse I might be laid off and be out of a job entirely. I asked the gas company to take me back, which they did, but I had to start all over again where I did years ago.

It was certainly a blow to me as I could see there is a big future for a fellow with a good education in the refrigeration game, and an excellent opportunity for new ideas, much more than in a gas works.

The ELECTRIC REFRIGERATION NEWS makes extremely interesting reading but from one not in the game any more I prefer literature on the subject with which I come into contact in my daily work.

I sincerely hope your publication flourishes the same as I think the refrigeration business is going to.

HENRY S. MASON.

Production Figures

CHICAGO, Ill.

Publisher:

Could you possibly furnish us with production figures of Frigidaire, G. E., Kelvinator, Westinghouse, Norge, and Servel, for the first four months of the year, or if that information is not available, could you furnish it for the month of April?

This information is purely for our office use and it would be very helpful to us if we could have these figures. We will likewise be glad to furnish our production figures for the same period.

R. S. BRUNHOUSE,
Sales Dept. Refrigeration,
Grigsby-Grunow Co.

Answer:

This information is not available, although arrangements have been made to collect statistics quarterly from the members of the refrigeration division, National Electrical Manufacturers Association.

In the May 6 (*Engineering Section*, Page 12) issue we published the first release by this Association, namely, total sales of electric refrigerators for all time up to December 31, 1930.

The figures for the first quarter of 1931 have not yet been released.

PUBLISHER.

Kind Words Dept.

DALLAS, Tex.

Editor:

We want you to know that we feel most kindly toward your splendid medium and believe that those who follow the suggestions and up-to-the-minute news will be more than repaid.

B. G. POWELL,
Advertising Mgr., Radio
Equipment Co. of Texas.

MANILA, P. I.

Editor:

I take this opportunity to congratulate you on the splendid news published in the ELECTRIC REFRIGERATION NEWS.

Owing to the fact that I am so far from the states, it is a wonderful help to me in keeping abreast of the new developments in the refrigeration industry.

R. H. BRADLEY,
Macohoray & Co., Inc.

BAY CITY, Mich.

Editor:

The ELECTRIC REFRIGERATION NEWS cannot be beat for good news on refrigeration.

C. H. EARL,
Refrigeration Service Co.

GREENVILLE, Ky.

Editor:

This firm has recently added electric refrigerators to its lines securing the Servel franchise. Spent half a day at the Evansville plant latter part of last week, and pretty thoroughly covered the factory.

We are subscribers to your journal, and while we also take two others, are frank to say we think most of yours. Its bi-weekly appearance, keeping right up with the procession, is only one feature of benefit over the monthly journals. We read it so thoroughly, and refer to it so frequently, that there is hardly a day it is not consulted. And we shall carefully file every copy.

ORIEN L. ROARK,
The J. L. Roark Estate.

Home and office furniture, floor-wall covers, decorations, licensed funeral directors, embalmers, victrolas, records, radio, pianos, musical merchandise, ambulance service.

More News About

I would like to see more news about: Refrigerating gases.—Stuart Battan in charge of Longwood Farms, Du Pont private estate, Kennett Square, Pa.

Battle against public utilities.—E. F. Winfield, Grand Junction, Colo.

Novel merchandising plans; window display ideas (photos).—I. F. Gardner, Minneapolis, Minn.

Commercial refrigeration news and sales.—E. W. Jones, Lakewood, Ohio.

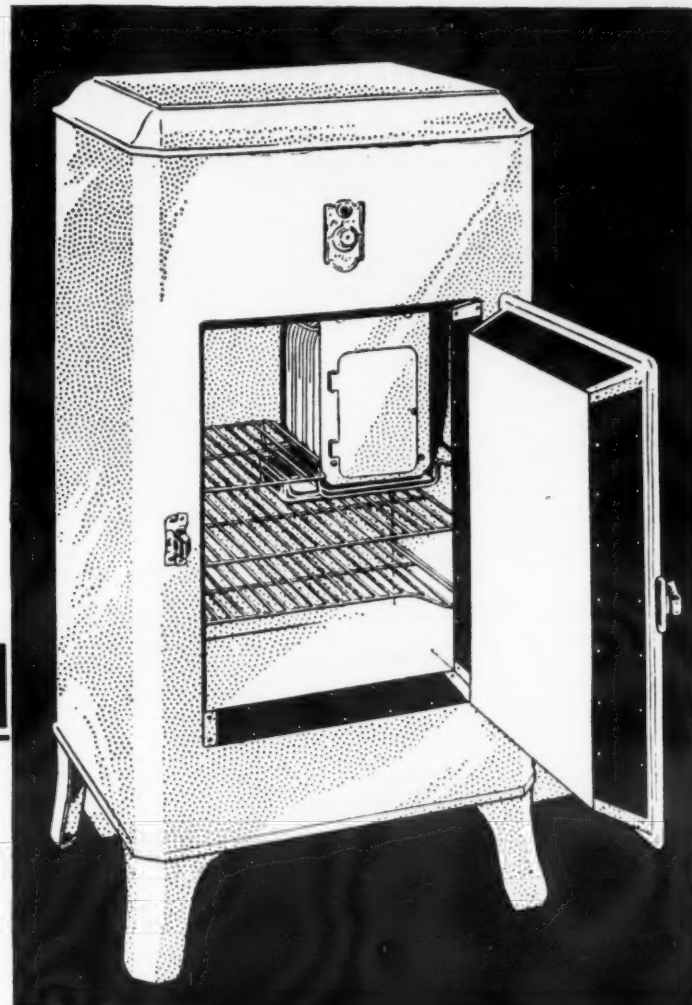
Strictly technical discussions.—F. E. Cobb, St. Louis, Mo.

The history of electric refrigeration; the progress it has made in the last 10 years.—A. S. Kossler, Cleveland Heights, Ohio.

Selling ideas.—The Hanna Corp., Stevens Point, Wis.

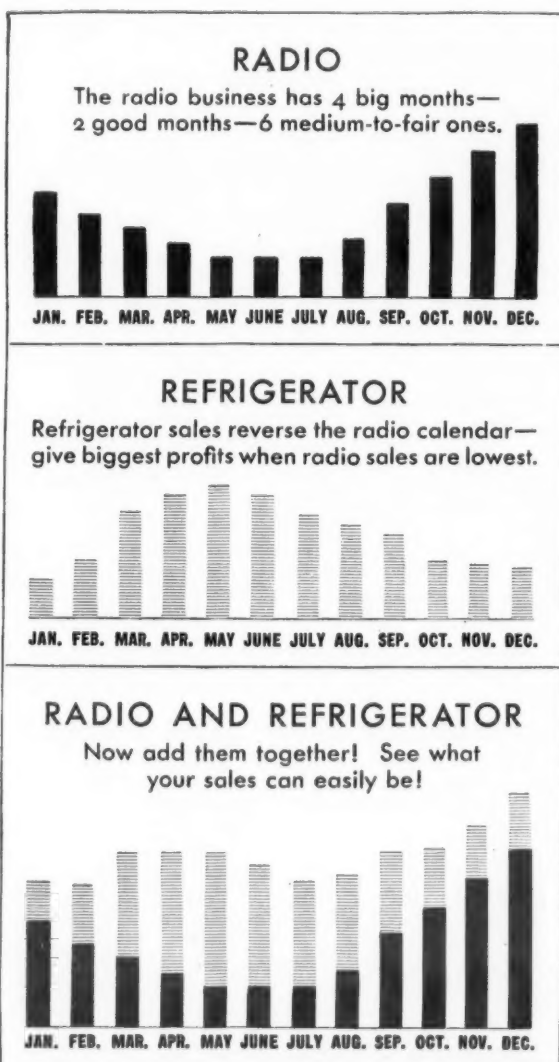
Food freezing.—Peterson Rapid Freezing Systems, Chicago, Ill.

Made in 3 sizes, with 7, 8 and 10 square feet of shelf area. All have Pyroxalin Lacquer exterior finish, Porcelain-on-Steel interior, Positive Air Circulation feature, Hermetically Sealed Unit and 26 other great features.



Mighty Monarch
of the Air

There is no seasonal problem for MAJESTIC Dealers



Just as the "natural" radio months end, refrigerator sales begin. During those months when radio prospects are hard to find and difficult to sell, refrigerator sales are at their peak. In the Fall, when the public loses some of its interest in the cooling of food, radio comes back into its own. Majestic Dealers have only to follow this cycle for year 'round profits.

Two and one-half million Majestic Radio owners are "leads" for the sale of Majestic Refrigerators. The public knows that Majestic builds a quality product and, by highly developed manufacturing methods, can set prices that mean Value. Majestic discounts are so arranged that a dealer can make a worth-while profit on his investment and his work. Majestic Distributors are experienced merchandisers and work *with* their dealers.

If you do not hold a Majestic franchise, call, write or wire the Majestic Distributor at once.



MIGHTY MONARCH
OF THE ARCTIC

GRIGSBY-GRUNOW COMPANY
CHICAGO, ILL.

Makers of

Majestic

RADIO and REFRIGERATOR

BUREAU IN ST. LOUIS CLOSES BIG JUBILEE

ST. LOUIS—Coming to a close June 1, the Spring Prize Jubilee sponsored by the Electric Refrigeration Bureau of St. Louis drew thousands of spectators to the showrooms of dealers and distributors and to the cooperative exhibit staged at the main office of the Union Electric Light & Power Co.

For a period of two weeks city-wide refrigeration demonstrations were conducted by companies, representing 10 makes of electric refrigerators.

Prior to the opening of the Spring Prize Jubilee, the committee in charge were guests of C. E. Michel, sales manager of the Union Electric Light & Power Co. and chairman of the local Bureau, at a dinner in honor of Dr. G. W. Allison, manager of the Electric Refrigeration Bureau of the National Electric Light Association, New York City.

This dinner preceded a meeting of some 500 dealers, distributors and salesmen at which the Jubilee was formally opened. Speakers at the meeting were: C. E. Michel; Mrs. N. M. Windsor, representing the judges in the Jubilee prize contest; and A. E. Schanuel, director of the Bureau.

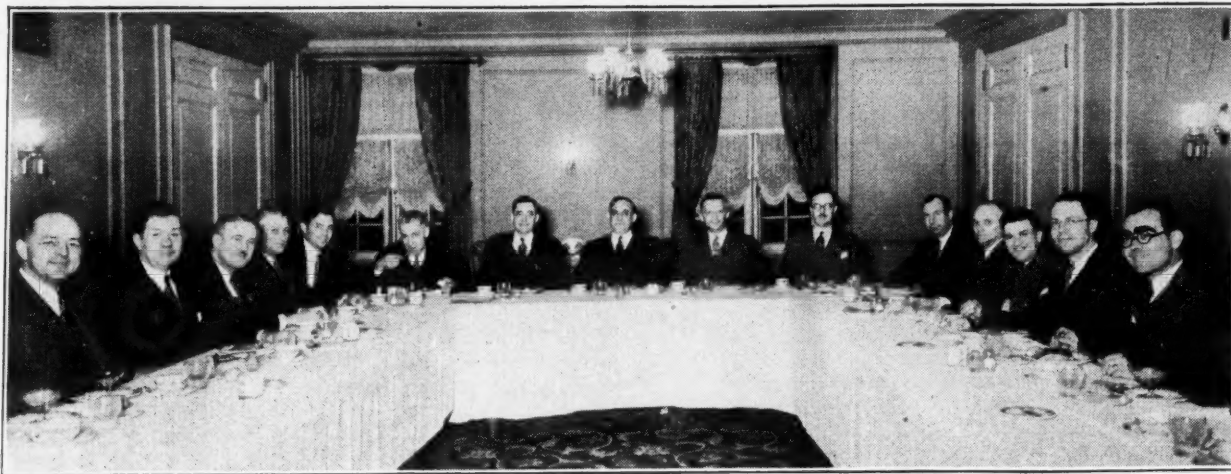
Attending the banquet were: (left to right)—A. R. Lindburg, president, A. R. Lindburg Co.; S. F. L. Snyder, merchandise manager, Union Electric Light and Power Co.; W. M. Burton, advertising manager, James & Co., Inc.; Fred Stafford, wholesale sales manager, Central States Distributors, Inc.; L. D. James, president, James & Co., Inc.; R. C. Houck, manager, Kelvinator Sales Corp.; Dr. G. W. Allison, manager, Electric Refrigeration Bureau, National Electric Light Association; C. E. Michel, sales manager, Union Electric Light and Power Co.; Arthur E. Schanuel, vice president, Hart Vance Advertising Co.; Robert L. Hughes, secretary, James & Co., Inc.; E. G. Blumeyer, sales manager, Fuchs Appliance Co.; H. D. Bibb, sales manager, Koerber-Brenner Co.; R. J. Winters, Koerber-Brenner Co.; T. T. Kopplin, advertising manager, Brown & Hall Supply Co.; Henry Weis, Jr., president, Zerozone-St. Louis Co.

Other members of the committee were: A. C. Brandt, president, Brandt Electric Co.; J. C. Chambers, sales manager, The Del-Home Light Co.; M. L. Daugherty, sales manager, Kelvinator Sales Corp.; Chas. L. Fink, manager, A. R. Lindburg Co.; H. J. Fuchs, president, Fuchs Appliance Co.; A. T. Golding, general manager, Central States Distributors, Inc.; H. C. Hoffer, sales manager, Lindeman-Hoffer, Inc.; H. G. Koerber, president, Koerber-Brenner Co.; W. O. Waldsmith, president, The Del-Home Light Co.; and Fred A. Weibe, vice president, Brown & Hall Supply Co.

COOPER MOTOR COMPANY TAKES DISTRIBUTORSHIP

OKLAHOMA CITY—The Tom Cooper Motor Co., well known distributor for Nash automobiles, has been appointed Kelvinator distributor in that territory, replacing the Oklahoma Gas & Electric Co., legislated out of the electric appliance business.

Jubilee Manager Host at Banquet



Members of the committee in charge of the St. Louis Spring Prize Jubilee were guests of C. E. Michel at dinner.

OMAHA DEALERS ORGANIZE REFRIGERATION BUREAU

OMAHA—Forty-four electric refrigeration dealers handling 15 makes of machines have organized the Omaha Electrical Refrigeration Bureau, for local work in connection with the national campaign sponsored by the N. E. L. A. R. C. Geppert, assistant to President Davidson of the Nebraska Power Co., is chairman of the executive committee. Electric refrigerator dealers and the Nebraska Power Co. will stage a Home-makers Show in the city auditorium June 9, 10, 11, 12. Eleven separate displays of electric refrigerators will be made.

Entrants to date for the show are: Dutton & Sons Co.; Westinghouse Electric Supply; Storz Electrical Refrigeration Co.; R. S. Proudfoot Co.; Wright & Wilhelmy; H. C. Noll Co.; Frigidaire Sales Corp.; National Accessories Co.; Schmoller & Mueller Piano Co.; Graybar Electric Co.; and the Nebraska Power Co.

SERVEL FRANCHISES RADIO MERCHANT IN BUFFALO

BUFFALO, N. Y.—The Buffalo Talking Machine Co., wholesale distributor of radio receivers and other appliances, has taken distribution of the Servel refrigerator.

Since adding the new line the company has moved from the Sidway Bldg. at Main and Goodell St. to 1015 Main St. M. O. Grinnell, sales manager, will be in charge of the new refrigeration department.

BRAID COMPANY INCREASES DEALER STAFF

BIRMINGHAM, Ala.—The Braid Electric Co., distributor for Norge, has appointed five dealers in this district. They are: Jefferson Home Supply Co.; Love-man, Joseph and Loeb; Hunter & Allen Furniture Co., all of Birmingham; Hood McPherson, Ensley, Ala.; and the Radio Shop, Bessemer, Ala.

Sales Staffs Hold Joint Outing

CLEVELAND—Westinghouse refrigerator salesmen operating in the Cleveland and Pittsburgh areas took a day off on June 1 to frolic at Conneaut Lake, Pa.

The day's outing was arranged by the Danforth Refrigeration Co., Westinghouse distributor in Cleveland, which also handles distribution in Pittsburgh under the name of Whitehill & Danforth, Inc.

Both organizations participated in a recent sales contest in which the Cleveland forces ran off with the honors by scoring 1,900 points, as compared with 1,500 for the losers.

Each sale scored a number of points, with retail orders scoring the most points and apartment house sales a lesser number. The Cleveland staff having a smaller quota than the Pittsburgh office was allowed to increase the points for each sale by 50 per cent, the variance in the two quotas.

It was originally planned that the loser should fete the winner at an all-day outing, which was later changed to the joint affair at Conneaut Lake.

ELECTRO-KOLD BRANCH TAKES LARGER TERRITORY

SEATTLE, Wash.—The local branch of the Electro-Kold Corp., under the direction of A. A. Wilson, general manager, which has handled retail sales in this city, has taken charge of distribution in western Washington.

C. D. Ellis, traveling representative, will handle dealer distribution from the Seattle headquarters, and will make contacts in the western half of the state.

Announcement of the expanded scope of the Seattle office followed the visit of E. S. Matthews, president of the Electro-Kold Corp., Spokane, who stated that the factory was working close to capacity.

NEW HAVEN DISTRIBUTOR ORDERS FOUR CARLOADS

NEW HAVEN, Conn.—The Plymouth Electric Co., Ice-O-Matic refrigerator distributor for Connecticut, Rhode Island and four counties in Massachusetts, received four carloads of refrigerators during the first two weeks of May and appointed seven additional dealers, according to Louis Yudkin, in charge of sales.

R. J. Mailhouse, president, recently visited the Williams factory in Bloomington, flying both ways.

New dealers are: Jesse M. Tavares, Warren, R. I.; Eagle Radio, 229 Asylum St., Hartford, Conn.; Perra Bros., 90 High St., Taunton, Mass.; G. N. Tolman, 100 State St., New Haven; Kuhnly Plumbing & Heating Co., Rockville, Conn.; and George Fehrer, Addison, Conn.

The True Utilities Corp., Hartford, formerly the Oillectric Co., has renovated its showrooms and recently staged a special showing of the Ice-O-Matic models. William True is president of the concern.

DALLAS MAN ORGANIZES APPLIANCE COMPANY

DALLAS, Tex.—A. P. Bryant, formerly merchandising manager of the Dallas Power & Light Co., has organized Electric Appliance Stores, Inc., to take over the retailing of appliances. Branch stores will be opened in the suburban districts of Dallas.

Coincident with the announcement of the new company, S. C. Griswold, president of Griswold-Rogers, Inc., General Electric refrigerator distributor in Dallas, states that Electric Appliance Stores, Inc., will handle the General Electric refrigeration line in that territory.

The Dallas Power & Light Co. will continue the sale of General Electric refrigerators, but will be on a resale basis.

FLEISCHLI, HOOGLAND HEAD SPRINGFIELD BUREAU

SPRINGFIELD, Ill.—Edward C. Fleischli, sales manager of the Illinois Power Co. and C. C. Hoogland, vice president of the Capitol City Paper Co., Servel distributor, have been placed in charge of the newly organized Springfield Refrigeration Bureau.

JONES REPORTS GOOD SALES BY UTILITIES

DAYTON, Ohio.—With approximately 25 utility companies holding refrigeration sales campaigns in which Frigidaire equipment is featured, Frigidaire sales through such outlets are well ahead of last year, according to George S. Jones, Jr., manager of the public utilities division of Frigidaire Corp.

"Those companies which are merchandising Frigidaire are thus far exceeding the 29 per cent increase over last year's business sought by the Electric Refrigeration Bureau of N. E. L. A.," Mr. Jones said.

"April sales of Frigidaire equipment made by these central station outlets were 48 per cent ahead of those for the same month last year, and available records indicate that this pace was sustained throughout May.

"The success of public utilities handling Frigidaire in finishing the first half of the year well above the percentage of increase called for by the national quota gives splendid evidence that this year's goal is well within striking distance. Sustained merchandising activity will put the campaign over."

SUNBEAM MAKES PLANS FOR FACTORY ADDITION

EVANSVILLE, Ind.—Contemplated plans for a new building unit for the Sunbeam Electric Mfg. Co., manufacturers of Sunbeam refrigerating units, are announced by Henry Schroeder, vice president of the company. Estimated cost of the building will be about \$25,000.

"The building will provide facilities for segregation of refrigerator production from the locomotive headlight and farm lighting equipment operations of the company," John A. Wieber, secretary, stated. "It is probable that plans will be ready in time to complete the building addition during the current year."

Production of units at the Sunbeam plant is averaging 1,500 a month to meet orders from Sears, Roebuck, Mr. Schroeder reported. He anticipated production being stepped up to 2,000 units a month soon.

BINDER CO. GETS LARGER DISTRIBUTING AREA

MT. CLEMENS, Mich.—Following a recent visit of Benjamin Binder to the Copeland factory, announcement was made that the Binder Electrical Supply Co., for four years Copeland distributor at Trenton, N. J., has been given the additional territory of northern New Jersey.

The Binder Electrical Supply Co. started 12 years ago in the business of wiring houses. With the development of the electric appliance business they entered that field. They took on radio and later Copeland electric refrigerators.

In increasing its Copeland activities, the company has discontinued its house wiring department and has given over the available space to a complete line of cooling equipment for markets, etc.

NEW LEONARD DEALER

AMARILLO, Tex.—Leonard electric refrigerators are now being handled by Green Brothers Co., which operate a furniture store in this city.

Rex

Rex Cabinets . . . quality built, for every requirement in a range of sizes from four to fifteen cubic feet (net) storage capacity. Rex cabinets are also offered in a complete range of sizes for residence or apartments.

Rex offers special assistance to unit manufacturers in the development of new lines.

Write for further information.

Rex Manufacturing Co., Inc.
Connersville, Indiana

DICELE
ELECTRIC REFRIGERATION

—PRODUCTS—

A SERVICE TO THE REFRIGERATION INDUSTRY

Model 400, 1-6 H.P. Single Cylinder Condensing Unit

PRECISION BUILT COMPRESSORS and COMPLETE CONDENSING UNITS

for Electric Refrigeration Manufacturers, Distributors and Dealers

Our plan allows the assembler to advertise and sell under his own name. Sizes for 1/6, 1/4 and 1/3 H. P. Also commercial sizes up to 3 H. P. Air and water cooled. Sulphur dioxide and methyl chloride condensing units. Ideal for domestic refrigerators, ice cream cabinets, water coolers and small commercial installations. Prices lowest in the history of electric refrigeration. Full details given on request.

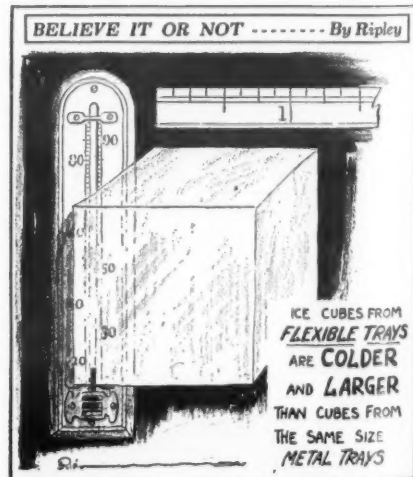
Deissler Machine Company
Greenville, Pa.
New York Office, 15 Moore Street
Manufacturers of complete domestic and commercial refrigeration systems

BOOST YOUR SALES WITH FLEXIBLE RUBBER FREEZING TRAYS

NOW . . . NATIONALLY ADVERTISED

Instant acceptance has been accorded this modern convenience—already hundreds of thousands of refrigerator owners have bought flexible rubber freezing trays which deliver ice cubes instantly from tray to glass. No need to melt the cubes into the sink under a splashy faucet—no sticking—no pounding.

"Believe-It-Or-Not" Ripley cartoons are today featuring the exceptional advantages of these trays in fifteen national magazines, including Collier's, National Geographic, The New Yorker, Vogue, Vanity Fair, House & Garden, House Beautiful, and others.



The above "Believe-It-Or-Not" Ripley Cartoon is the second of a series of similar illustrations that are being featured in Flexotray advertising in national magazines.

Cash in on this campaign. Public demand is growing amazingly. Get complete information about these trays and stock them. Write either to the manufacturer of the refrigerator you sell or direct to us.

THE INLAND MANUFACTURING CO.
Dayton, Ohio

Flexo-Tray
Patented and Patents Pending Reg. U.S. Pat. Off.

ICE CUBES THE MODERN WAY

ONE BUILDS SMALL HOMES



ONE RENTS APARTMENTS



ONE SELLS CO-OPERATIVES



but they all choose **ELECTROLUX**

Let these representative real-estate men tell you why:—



MR. MILTON SIRKIN, President of the Island Housing Corporation, says:—

"Electrolux gives me a talking point that is particularly effective with women. The economical operation of the Electrolux is the thing I stress. Saving dollars every month interests the buyers of \$8,990 homes. The fact, too, that a cheaper, less satisfactory refrigerator has not been used, helps impress them with the worth of the house."



MR. GUSTAVE KELLNER, Brooklyn apartment house operator, has a different

problem, but he likes Electrolux, too. "I've tried other types of automatic refrigeration, but none so fully satisfy both tenant and buyer demands as Electrolux. My last three apartment houses have been 100% Electrolux equipped, and now I'm replacing all other makes with Electrolux in my other buildings. To my mind, no refrigerator can touch it for economy, silence and dependability."



MR. JOSEPH PATERNO built the great co-operative apartment at 1220 Park Avenue, New York. He agrees with Messrs. Sirkin and Kellner:—

"Before choosing my first automatic refrigerator, I studied the various makes carefully. Then I picked Electrolux. My reasons were three: *First*, because Electrolux is the only automatic refrigerator that never can make a sound. With no moving parts there's no chance of its growing noisy. *Secondly*, the simplicity of Electrolux helped influence me to choose it. It has no machinery to wear, to ever need attention or repairs. *Thirdly*, Electrolux, I found, is also the most economical refrigerator to operate, which is a good selling point to interest prospective tenants."

ELECTROLUX REFRIGERATOR SALES, Inc., Evansville, Ind.

ELECTROLUX

THE *Gas* REFRIGERATOR



A tiny gas flame takes the place of all moving parts

Little Stories of Interesting
IDEAS
In the Refrigeration Industry

THE EXPANSION VALVE

By George F. Taubeneck

Little Stories of Interesting
PEOPLE
In the Refrigeration Industry

Refrigerating Criminals

Many strange things come from Hollywood. Just now Al Capone seems to have dethroned the composite of Casanova, Isadora Duncan, and Elinor Glyn which has so long reigned as the Deity of the Cinema; likewise the machine gun has supplanted the Colt-and-holster. From this Pandora's Box directors have drawn a weird miscellany indeed.

Whether or not Hollywood's present preoccupation with gangster lore has had any influence upon the investigations of Dr. Ralph S. Willard is a matter of conjecture.

The learned doctor believes, however, that he has stumbled upon a cure for whatever it is that ails habitual criminals.

Dr. Willard is a biological chemist. Some time ago he thought of something new to do with that useful little quadruped, the guinea pig. He placed several in a refrigerator, injected sodium nitrate into their veins to prevent blood clots, and slowly brought the temperature down to zero.

The guinea pigs were frozen stiff. During their several hours of frigid-ity, the little animals were furnished oxygen in varying quantities according to the temperature. Other precautions were taken in this well controlled experiment, and the guinea pigs emerged from their period of cold storage with increased Wim, Wigor, and Vitality.

"Their tissues apparently were renewed, their glands benefited, and they gained weight rapidly," declares Dr. Willard.

In that rather non-committal statement, "their glands benefited," lie realms of interwoven theories, hypotheses, and speculations.

Glands, many scientists avow, influence human behavior. Criminals, these scientists suspect, get that way because of irregular, malharmonic glandular activity.

Dr. Willard and his assistants, Raymond Walker and Grace Newbegin, discovered that unbalanced guinea pig glands were thrown back into gear by the cold treatment. With rabbits, the same result.

These experimenters are convinced that out-of-step human beings can be readjusted by the same process of refrigeration, if proper equipment and means of control can be perfected. Thus criminal "instincts" could be cured.

Chicago's Problem has given Hollywood a new theme. Perhaps (but don't place any bets just yet) Hollywood can repay the debt, with interest, by offering a solution to the Problem.

One the face of it, freezing out crime should be simple. Commissioner Alcock would merely need to herd the roster of Public Enemies into a low temperature room, adjust the cold control, and let nature take its course. (My secretary suggests we call this a "law" temperature room).

Carrying the amusing conjectures to their logical conclusion, one can foresee a great new market for compressors. Jails will become cold storage houses. Refrigerating engineers will supplant wardens and guards. Sirens will be replaced by thermostats. Crime commissions will be selected from the ranks of the A. S. R. E. Safe manufacturers and locksmiths will be forced into involuntary retirement. Judges—but we could go on like this all night.

Even more interesting to thousands of harassed parents is the possibility of a special compartment in household refrigerators for truculent small boys.

Holiday

In the May 20 issue we published a picture we thought was a dandy. It showed leading engineers from Frigidaire, Kelvinator, Copeland, Servel, General Electric and Majestic enjoying a friendly "session" in Kansas City.

The very personification of cooperation and felicitous industry relations this photograph told the story of high standards of sportsmanship and mutual regard among refrigerating engineers better than a series of inspired editorials could have done.

One night last week the Valve saw another—and more interesting—picture of mutual esteem among refrigeration leaders. No camera was available, so we must do our humble and meagre best to transmit it to you in words.

Scene: Essex County Club, near Windsor, Canada. Time: 7 to god-knowswhat o'clock. Dramatis personae: E. G. Biechler, president of Frigidaire; George Mason, president of Kelvinator; Louis Ruthenburg, president of Copeland; P. B. Zimmerman, manager of the General Electric refrigeration department; G. R. Johnson, president of Universal Cooler; R. T. Frazier, Tennessee Furniture Corp.; J. A. Harlan, Frigidaire vice president in charge of sales; H. I. Burritt, Kelvinator vice president in charge of sales; M. G. Sweeney, G. E. production manager; Walter Landmesser, G. E. commercial manager; others (see story on page 2, column 5.)

Gathered together under this cozy roof were a prize group of what George Bright would call: "Barons of the Industry." Out in the field the organizations they headed have been fighting bitterly, contesting every inch of ground their competitors gain.

Here were the men at the top of the heap. Men who are under tremendous pressure, who are pouring creative energy into a rising new industry. Men who travel the second mile, who add the extra ounce, every day. Men who are striving among one another for mastery.

Yet these men can play. And all are accomplished goodfellows. One saw Biechler and Zimmerman walking arm-in-arm down a corridor, talking seriously but exchanging smiles often. In a locker room were Mason and Ruthenburg, conversing happily like old comrades meeting for the first time in a decade.

At dinner all four of these men sat together at one end of a table. Between courses they played a good old American game, and played it with all the enthusiasm and boisterous spirits of schoolboys. They called one another "Ruth," "Biech," "Zim" and "George."

A great time they had together, and the backslapping, choruses of guffaws, and good cheer seemed as genuine as it was spontaneous.

Following a day of arguments and attempts to harmonize diverse ways of thinking, these men were big enough to forget their differences, and enjoy a companionable evening.

Tactics of uncontrolled salesmen occasionally lead observers to think that no-holds-barred competition and rivalry in this industry match its aggressiveness. This may be true.

After seeing a get-together of a group such as that at the Essex County Club, however, one is pretty well convinced that hijackery methods are not inspired nor approved by the Men at the Top. These gentlemen seem to like and respect one another, and show it.

G. M. Johnston

Receiving the crowd was G. M. Johnston, president of Universal Cooler (which has recently acquired Absopure). He was a capital host. No man was neglected, all wants were supplied, everybody met everybody else all over again, and the atmosphere was convivial from the beginning.

Like his confreres, Biechler, Mason, Ruthenburg and Col. Smith (the Servel president had to catch an early train and was unable to stay for the dinner), Johnston is a square-built, heavy man of substantial proportions. Weighty men for weighty responsibilities.

In common with this distinguished group, Johnston may be said to have a presence. He act, talks and walks like a president.

Louis Ruthenburg

A thoroughgoing student, a relentless seeker after facts, an executive whose business judgment seems to be respected everywhere, a coiner of meaty phrases, and well-lettered man of affairs, Louis Ruthenburg can also play—when occasion for relaxation arrives.

He has quick comebacks for jests, and is something of a jester himself.

His partially-bald-remainder-gray head, the furrows in his brow, and his poise indicate that he is likely older than many executives in this "young men's industry."

And his smooth, accomplished manner of playing and being a good-fellow signify that all his experience hasn't been gained in factory and office.

P. B. Zimmerman

Another studious, hard-thinking executive who is a smooth worker in this conviviality business is the head of the G. E. refrigeration organization.

His is perhaps the youngest appearance of the chief executives, with his erect carriage and light footsteps, and his healthily pink cheeks.

His, also, is the precious ability of drawing others out, of evoking pet anecdotes, of inserting leading questions into a conversation, of keeping everybody present in the picture.

In days of yore when everyone pumped up water from wells by hand, it was often necessary to pour water into the pump as a "primer" to start action. Zimmerman's ready but restrained flow of words does just that. He is a "primer" to conversation, a "prime mover" of sociability.

E. G. Biechler

"The life of the party" was President Biechler of Frigidaire. The virile energy which he expends so recklessly in driving his organization finds an overflow outlet in conviviality readily and easily.

Like most born salesmen, he is naturally gregarious, and has such a good time out of little parties of this sort that he infects all those around him with the same spirit of hearty cordiality.

He is blessed with one of the finest speaking voices in the industry (probably would have made a good opera singer, had he been so inclined!), and its rich, vibrant tones radiate warmth and human feeling at times such as we have been describing.

Broad of shoulder, dark, heavy, the energy which he generates is constantly boiling over the top.

George Mason

This little attempt to demonstrate that important executives of the refrigeration industry can be just as human and fun-loving as the most capricious of salesmen needs no better example than that afforded by President Mason of Kelvinator at the party of which we have been writing.

His friends called him "George," and he responded in kind. Robust, deep-voiced, young-appearing with a mature cast of countenance, he took to the jocular and merrymaking as naturally as children take to candy.

If the cue was to talk business, Mr. Mason was ready, and commanded attention with his comments. If stories were the order of the hour, he was prepared with some new ones. If indoor sports were being played, he demonstrated professional prowess.

Whatever the situation, he met it with a lusty right to the jaw and a happy grin.

R. T. Frazier

From that delightful Tennessee city of Chattanooga came R. T. Frazier, who directs the refrigeration operations of the Tennessee Furniture Corp.

He owns a fine head of iron-gray hair, an athletic build, self-assurance, and a co-operative spirit. Although his concern is a comparative newcomer to the electric refrigeration industry, he has come up from the South to put his feet under the table with the rest of the Nema group.

He understands refrigeration, is acquainted with the problems of the industry, and "means business." Observant and attentive, he seemed to be absorbing much information, and to have caught the mood and temper of the group with which he has become affiliated.

Burritt and Essex

Lytton Strachey, English historian, and Maxwell Anderson, American dramatist, have both won considerable re-

nown by depicting the muddled situations which arose from the relations of Elizabeth (queen of England) and Essex (her noble lover).

Provincially, almost equal notoriety was attached last week to the names of H. I. Burritt (Kelvinator vice president in charge of sales) and Essex (Canadian Country Club).

To guests of the evening Mr. Burritt gave a map, which reputedly gave directions from Detroit to the Essex Country Club.

Following these printed directions, parties of refrigeration executives wandered far and wide over the Canadian countryside in search of the evening's rendezvous. As Mr. Ruthenburg expressed it: "We traversed Essex, Sussex and Middlesex before blundering into this clubhouse."

After steaming down the King's Highway No. 3 "almost to Niagara Falls," motoring parties began asking questions of filling station proprietors. From no two gasoline dispensers was identical or even coherent information obtained.

When the travel-worn tourists finally collected at the Essex Country Club, began comparing notes, and found that all had had the same experience, black looks were directed toward mapmaker Burritt, and murmurs of "frame-up" were heard.

The tumult and the shouting died, however, when it was learned that the Kelvinator vice president himself had difficulty locating the mysteriously hidden country club, having been misled by his own map.

Harlan, Donovan

Two of the best raconteurs the Valve has heard in many a moon are J. D. Harlan, Frigidaire vice president in charge of sales, and J. J. Donovan, G. E. apartment house division manager.

Donovan has that rare gift of telling tales in dialect. Like Ruth Draper, Cornelia Otis Skinner and Fred Brack's secretary, Donovan can relate an involved episode in the lives of a Dutchman, an Italian, a Hebrew, and an Irishman, and reenact the roles of each with startling realism.

Harlan, like Mr. Biechler, is a "life of the party" fellow, and has on tap a bottomless reservoir of yarns of all classifications.

Half the effect of a story lies in the telling; and Harlan's deft touches make a mediocre story sound like a prize-winner picked by a jury composed of Irvin Cobb, Will Rogers and shade of Mark Twain.

He is tall, trim, has sandy hair and is instantly likeable.

Sweeney, Landmesser

Included in the Essex party were A. M. Sweeney, production manager for G. E. refrigerators, and W. E. Landmesser, manager of the commercial division of the same organization.

Sweeney matches the group of All-American guards (Mason, Ruthenburg, Biechler, Johnston, Col. Smith), mentioned previously, in bulk and squareness.

His face denotes strong will; his bearing is aggressive; he talks slowly, carefully, weighing his words, evincing well-grounded knowledge of the subjects upon which he offers information or opinion.

Landmesser belongs to the "medium size" category, has wavy dark hair, eyes which dart and flash, a determined mouth, and a running spring of nervous energy. He, too, knows whereof he speaks.

C. G. Frantz

Some 18 years ago the brothers Frantz began making vacuum cleaners in Cleveland. Proverbially, the lowly beginnings heralded an advanced stage of business volume. To the vacuum cleaner was added a washing machine, then an ironer, and later a radio. All bore the trade-mark, "Apex."

The radio has been discontinued, but the former Wayne electric refrigerator is now the Apex electric refrigerator, since the Frantz brothers have bought this Wayne division from the Berghoffs. Although present Wayne sales outlets are being supplied with the new Apex refrigerator, an attempt is being made to equip all Apex dealers with the complete Apex line.

Thus, in the space of 18 years, the Frantz brothers have gone from nothing plus an idea for a cleaner to an organization which merchandises four home appliances, has five factories in Cleve-

land, one in Fort Wayne, Ind., and one in San Francisco.

Walter A. Frantz, vice president in charge of manufacturing, has the responsible job of co-ordinating and directing all these factories.

C. G. Frantz, president of the Apex organization, is a graying, middle-aged man who bears on his face traces of the 18 years battle which he has fought to rear his industrial child from birth through its adolescent period of rapid growth.

Mild-mannered and soft-spoken, trimly built and quietly dressed, he seems to be anything but the stormy petrel type of company builder. From him one would expect conservative policies.

Fulfilling this expectation, he has decided that the first year of merchandising the Apex electric refrigerator will be one of testing, of slow progress and of strengthening of roots.

C. S. Gregg

Punch in the Apex organization is supplied by C. S. Gregg, advertising and sales promotion manager. Like many small men, Gregg has a lot of dash and verve and bustle. Ideas, enthusiasm, youth, likeability combine to make him a vivid man indeed.

Once upon a time he was a free lance writer. From those days he has carried over a practiced talent for concocting clever phrases, for writing smoothly and for evolving eye-snaring headlines.

Earmarks

After a considerable number of visits to the various home offices in the electric refrigeration industry, one becomes able to identify the organization to which a particular executive belongs. Each concern has a definite individuality, and either picks or molds its men according to a distinguishable pattern.

At Williams Ice-O-Matic, the watchword is Showmanship. At Frigidaire the word is Salesmanship. One finds there a group of likeable, erudite, sophisticated men - of - the-world, any one of whom could make a good living selling specialty goods from house to house.

If he says "goodnight" to a Pullman porter five nights a week, lives out of a suitcase, and talks about weather and business conditions in Seattle, Des Moines and Pittsburgh in the same breath, one can believe he is probably a Servel man, where the first requisite seems to be that the executive be a hardened traveler.

The distinguishing characteristics of a man from the General Electric refrigeration department at Cleveland are Youth and Nervous Energy. Full of young men and devoid of graybeards, energy is constantly bubbling over the top in this organization.

Walter J. Daily

Typifying the driving and staying powers of the G. E. Cleveland force is Walter J. Daily, sales promotion manager. Like others there, Daily is young, tremendously alert, and a fast worker.

A visit to his office is more entertaining than a trip to a zoo. Like a caged lion, his office (albeit large, as offices go) seems too small to confine his restless energy.

This office of Daily's is crammed with playthings—"sales helps" of every conceivable description, books, pictures, advertisements, and so on ad infinitum. At any moment he is liable to pick one of these objects up, ponder upon it, and put it down again.

When his French telephone rings, he picks it up, gets up, walks over to a window, looks out while he talks, paces up and down. Finished, he resumes his seat at the desk.

While doing (and probably thinking about) half a dozen other things, he appraises the visitor, gives him what he wants (if the hairtrigger decision-maker in his brain so rules), drains the visitor of information—and all in a very short space of time.

He makes an excellent news source, for he recognizes news when he sees it, knows where to find it and how

(Concluded on Opposite Page)

Expansion Valve

(Concluded from Opposite Page)

to get it, has a good "grapevine" intelligence system and is thus able to anticipate news, and does everything he can to make it easy for the reporter to get any story he wants.

Edwina Nolan

Testing recipes and demonstrating "cold cookery" on a stage are interesting and valuable, but to Edwina Nolan, home service director of the General Electric refrigeration department, they are secondary parts of her job.

Miss Nolan considers herself a merchandiser, and so do the powers-that-be for whom she works. Every portion of her demonstrations, every sentence of her talks, are planned with a single idea in mind: Making sales.

Her task is largely one of traveling the country round, visiting the home service departments set up by distributors and utilities, and attempting to inject merchandising appeal into the public appearances of the home economists.

"We must make these departments worth their salt to the distributors," she says.

Miss Nolan has been with G. E. not quite two years, yet she is almost as well known in the industry as the major male executives of the refrigeration department.

Her impeccable taste in clothes, her combination of evident femininity with masculine give-and-take fellowship, and her invariable good humor have earned her good dividends in popularity.

Before coming to G. E. she had nine years of experience in her chosen field with public utility operations in Minnesota's Twin Cities.

She, too, has the youth and the nervous energy which mark the G. E. representative.

E. B. Newill

While the number of Frigidaire vice presidents can't begin to compare with the regiment belonging to the Guaranty Trust Co., there are enough of them that E. B. Newill can be introduced by co-workers as "one of the younger of our vice presidents." He is in charge of engineering.

He does seem young for a vice president, and yet he carries about with him a quiet air of authority and a pleasant confidence, both of which inspire trust.

Like many another engineer in this industry, he is "middle-sized," has wavy dark hair, a firm mouth, and penetrating eyes.

Presidents and sales managers, one finds, are often husky, aggressive, and outspoken. Engineers are likely to be slight, retiring and taciturn.

Contributor's Corner

From Kathryn Maddrey, Dallas, Tex.: When a husband gives the family electric refrigerator to his lady friend, that is sufficient cause for divorce proceedings in the opinion of a Dallas, Tex., wife.

The husband in the case returned home with the other woman, presented her with various articles about the house, the family automobile, and the family refrigerator.

The woman drove off in the automobile, taking with her the more transportable gifts, and said she would return the next day for the electric refrigerator.

But that was too much for the wife. She hastened to her lawyer and divorce proceedings were instituted in the Forty-Fourth District Court.

Electric refrigeration plays its part in the eternal triangle!

From the Electrolux sales promotion department, Evansville, Ind.:

How should a salesman undertake to explain the advantages of good refrigeration to a person who is blind?

This somewhat perplexing problem was faced and solved by P. E. Salmon, of the new business department of the Brooklyn Union Gas Co., recently, when he called on a prospect who had lost the power of sight.

The salesman's method proved so successful that he sold two Electrolux refrigerators, one to the blind prospect and another to the latter's brother.

Mr. Salmon made the sales by carefully describing every detail of the appliance. Word-pictures, painted by the salesman, served as a substitute for sight for the prospective purchaser.

FANTLE OPENS RETAIL STORE

CINCINNATI—M. W. Fantle Co. has opened a retail store at 326 E. Fourth St., where a complete line of Majestic refrigerators, radios is on display.

ANOTHER REASON FOR INSULATING WITH TEMLOK!



Armstrong's new low-cost improved insulation is accurately cut to size in any thickness for quick, economical installation . . .

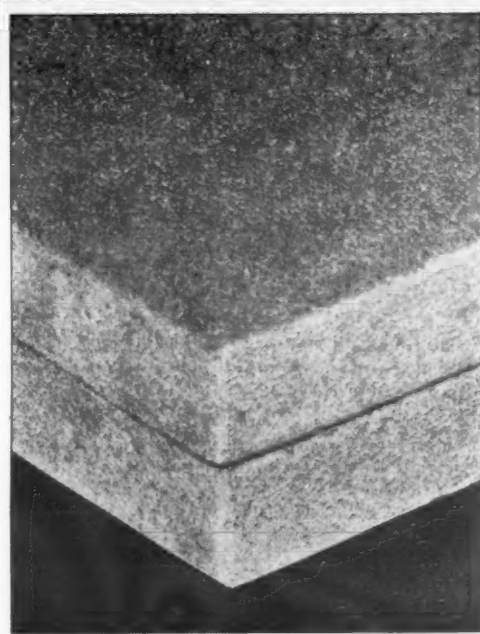
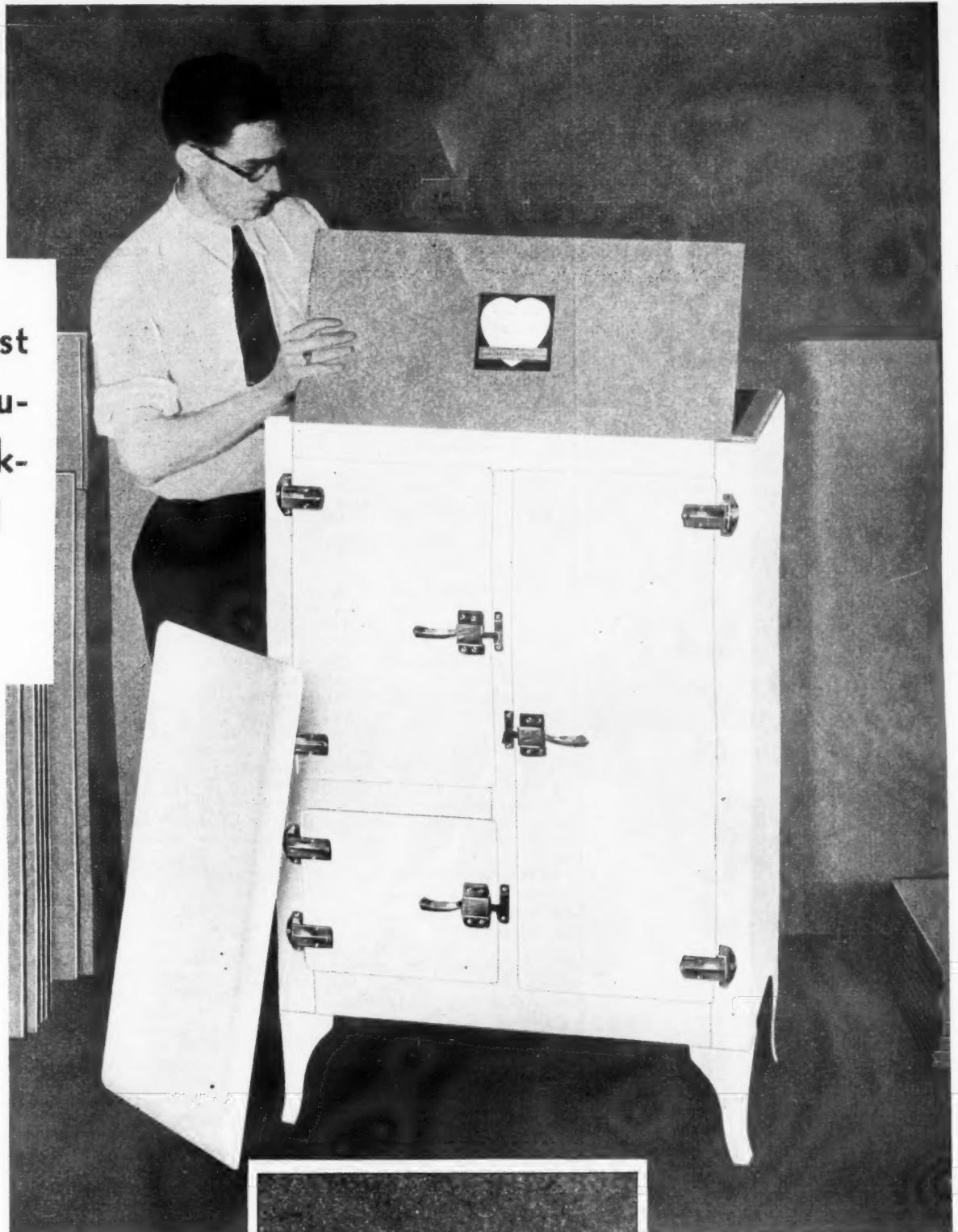
TO meet the exact requirements of domestic refrigerator manufacturers, Temlok, Armstrong's new low-cost insulation with improved physical characteristics, is furnished cut to size in any thickness. Temlok Refrigerator Insulation is made to strict specifications, and uniform quality is assured through constant factory checks and tests.

Use of Temlok saves time, saves waste, and provides quick, economical installation. Good boxes can be made better at less expense.

Armstrong's Temlok offers another outstanding feature. It is permanently moisture-resistant. It is made from the heartwood of Southern pine, the fibres of which are impregnated with natural resin. Fabricated into insulation board, the fibres retain an exceptionally high resistance to moisture. Thus Temlok performs efficiently for a lifetime.

Temlok also has a low coefficient of thermal conductivity. It is light in weight, rigid, and structurally strong. It is sterile and odorless. Temlok is made by Armstrong—another sales advantage. Customers know the name. Since 1860 Armstrong has made cork products. For more than a quarter of a century Armstrong has been a leader in the manufacture of high grade insulation products. And Armstrong is the maker of fine linoleum.

Of unusual interest to you is the fact that Temlok is low in cost. We'll gladly give you all the other facts. Complete information and samples will be sent on request. Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Pennsylvania.



Furnished cut to size in any desired thickness, Armstrong's Temlok Refrigerator Insulation is easily and economically installed.

Armstrong's
A
Product

Temlok is made in full half-inch, full inch, and laminated inch thicknesses, and in built-up layers to desired thicknesses. It weighs only .8 lbs. per board foot. Especially fabricated from the moisture-resistant heartwood fibres of Southern pine to meet the needs of the domestic refrigerator industry.

Armstrong's Temlok

Low-Cost, Efficient Insulation for Domestic Refrigeration

New Orleans Food Preservation Show Attracts 40,000 Visitors

NEW ORLEANS, La.—The New Orleans Food Preservation Association, composed of the New Orleans distributors of electric and gas refrigerators, the New Orleans Ice Industries, and New Orleans Public Service, Inc., joined in sponsoring a food preservation show here recently. More than 40,000 visitors attended.

The sales display floor of the Public Service Building was cleared for the occasion, and the refrigerators of every distributor were displayed in booths.

W. E. Clement, Louisiana state director, and commercial manager of New Orleans Public Service, Inc., was in charge of the show, being chairman of the Food Preservation Committee.

The auditorium on the eighth floor of the Public Service Building was used as a lecture hall for daily talks and demonstrations of food preservation and preparation. Local and national domestic science authorities, health lecturers, and refrigeration research engineers spoke on the daily program.

Everyone attending the show during the week was furnished a registration card which entitled him to a chance on an attendance prize in the shape of a five-foot capacity refrigerator, the choice of make being left to the winner. This was awarded on the last day of the show.

The cost of the show was approximately \$6,500. Daily advertisements in the newspapers, ranging from 1,000 to 1,900 lines, publicity stories every day, electric signs, billboards, street car bulletins, and pamphlets announcing the show were used as a means to attract the public. In all, \$3,100 was spent for publicity and advertising.

The lighting effects for the show, which included exterior flood-lighting of

the building, window display lighting, and indirect multicolored ceiling lighting, cost approximately \$900, while fountains on the display floor, window exhibits, floral designs, and general scenic effects cost \$2,400.

A week before the show, small "teaser" advertisements were run in the newspapers. The distributors, dealers, and local ice merchants cooperated with the Food Preservation Association in running tie-in advertisements simultaneously with the Food Show ads.

The daily lecture programs were arranged under the supervision of Miss Rose Michaelis, home economist. The talks included "Quantity Buying," by A. J. Frey, New Orleans food dealer; "Left-Overs," by Mrs. Adele Stewart, domestic science supervisor of the New Orleans Public Schools; "Salads," by Mrs. Louise Rackley, domestic science expert; "Milk and Cheese," by Mrs. W. D. Clayton, Orleans Parish home demonstration agent; "Desserts and Beverages," by Mrs. Ruth W. Oswald and Mrs. L. A. Riley, domestic science experts; "Health," by Mrs. Idabel Gieffers, of the Home Education Department of the City Board of Health.

In connection with these daily lectures were a talk on "Food Preservation," by V. C. Smith, refrigeration research engineer, and a one-act play, "Cooling Off," staged by employees of New Orleans Public Service, Inc. These programs were given twice daily, at 2:30 p. m. and 8:30 p. m.

THREE BUREAUS IN MARYLAND ORGANIZED

BALTIMORE, Md.—Three Electric Refrigeration Bureaus have been established in Maryland, according to M. J. O'Connell, state director. They are located at Hagerstown, Baltimore and Salisbury.

Recently there was a Better Homes Exhibition in Salisbury, and Frigidaire, Kelvinator and Majestic dealers joined the Eastern Shore Public Service Co. in giving a refrigeration show. A number of sales were made from the floor.

A meeting was later held in Baltimore with representatives of the various refrigerator manufacturers, the Consolidated Gas Co. of Baltimore, the Northern Maryland Power Co., the Potomac Edison Co., and the Eastern Shore Public Service Co.

This gathering resulted in the formation of a Baltimore Bureau. A Better Homes Exhibition was held in Baltimore recently, and all manufacturers' representatives made displays.

VERMONT DEALERS REPORT 57% OF QUOTA

MONTPELIER, Vt.—During the electric refrigeration Spring Jubilee, 13 local bureaus, covering five-sixths of the state's 61,504 domestic electricity consumers, sold almost a third of their year's quota of 2,833 by May 13. The town of Bennington, with 2,673 domestic consumers, was in the lead at that time with 57 per cent of quota.

The Twin State Gas and Electric Co., and the Central Vermont Public Service Corp. are beginning a two months' campaign on electric refrigeration.

State Director W. A. Buttrick is president of both companies. The campaign is known as the President's Refrigerator Sweepstakes, and there will be bonuses and prizes for employee participants.

Dealers In Erie Launch Drive

ERIE, Pa.—A seven weeks' Spring Jubilee campaign is the electric refrigeration program of the Electric League here. The program was put into operation May 11. The local plan consists of three ideas.

First, there is to be three-column newspaper advertising twice a week in both local dailies. Second, 125 truck banners and tire covers will be used on the vehicles belonging to public utility companies, the refrigerator dealers, and distributors, and salesmen.

The third feature is a bonus to be paid to Central Station employees for furnishing prospects resulting in the sale of an electric refrigerator.

The plan for employee cooperation was submitted by the League to the Erie County Electric Co. and the Erie Lighting Co.

Employees are supplied with prospect cards on which they list the name and address of any person who is interested in buying an electric refrigerator. These cards are turned over to the local dealers after they have been sorted for duplication by the League.

If a sale is made to one of the prospects whose name has been submitted by an employee, the latter receives a prize of \$5 from the Electric League, which is split with the salesman making the sale.

A weekly prize of \$10 is awarded to the employee who turns in the greatest number of leads that result in sales, and the runner-up receives \$5.

A campaign prize of \$100 will be awarded to the employee of the company who have furnished the most leads resulting in sales at the end of the campaign.

There are approximately 400 employees in the two central stations, and their interest is to be held by meetings at various times during the campaign, similar to the one at the opening. Employees will be served frozen desserts, and representatives of the manufacturers will be present.

Erie's quota for the year has been set at 1,500 electric refrigerators, the same percentage as suggested by the Electric Refrigeration Bureau, and it is expected that about 600 of these will be sold during the seven weeks' activity, with employees turning in about 245 of the successful leads.

The budget for the Spring Jubilee is \$1,640, which is 5½ cents per domestic consumer.

BOISE COMMITTEE STAGES REFRIGERATION SHOW

BOISE, Idaho—The Boise Refrigeration Bureau has been recently organized in this state. Roy L. Walker, of the Walker Electric Co., is the permanent chairman.

Committees to handle executive matters, advertising, and the planning and operating of an electric refrigeration show have been appointed.

A local advertising budget has been subscribed and underwritten.

The first joint activity of the new Bureau was a result of the speedy action of the electric refrigeration show committee. All local dealers and other merchants cooperated in putting on the show during the afternoons and evenings.

The exhibit was kept open during the afternoon from 2:30 till 6, during which time frozen desserts were served; and from 7:30 till 10 in the evening, when orchestra music was provided.

Dealers and their prospects from a radius of 100 miles around Boise added their numbers to those of local visitors. The vacant storeroom in which the show was held was donated by the property owner.

Portland Refrigeration Bureau Swings Into Action

PORTLAND, Me.—The first Electric Refrigeration Bureau to be completely organized in the State of Maine is now in full swing, and 100 per cent cooperation of members is reported. This Bureau covers territory in southern and western Maine.

Officers were elected and a complete advertising program for the year was adopted at the first meeting of dealers called to organize the Bureau.

Fred D. Gordon, state director for Maine, attended this meeting and outlined the Electric Refrigeration Bureau program in detail. The Bureau headquarters is located in Portland, and the officers are Roy E. Holden, chairman; Guy G. Smith, secretary, and Kenneth C. Allen, treasurer.

Advertising in newspapers and show windows has taken place, and envelope stuffers have been sent to all electric light customers. Two spring shows have also been held, and another will be held in the Fall. Broadcasting and outdoor advertising are also in evidence.

During the first three months of this

year 38 per cent of a quota of 1,750 electric refrigerators were sold.

An important feature of the Maine Sportsmen's Show, which was held in Portland during the second week in April, was the large booth sponsored by the local Electric Refrigeration Bureau to display the latest models of electric refrigerators.

The booth contained about 1,000 sq. ft. of floor space. A miniature log cabin, 8x12 ft., which was built in the Maine woods by a woodsman, was set up in the booth as a centerpiece.

The refrigerator display was built around this woods setting, 14 cabinets being employed. Rustic chairs and tables served to add to the attractiveness of the showing. Two young ladies were in attendance to give out literature and answer questions. No attempt was made to make any sales, and no salesmen were present.

The second Spring showing was held in connection with the Portland Food and Home Progress Exposition. Eleven dealers were represented.

Exports of Refrigerators

March Shipments Reported by the Bureau of Foreign and Domestic Commerce

	Electric Household Refrigerators		Electric Commercial Refrigerators Up to 1 Ton		Parts for Electric Refrigerators	
	Number	Value	Number	Value	Number	Value
Austria	23	\$ 2,934	6	417	814	
Belgium	174	25,906	55	6,383	12,051	
Czechoslovakia	21	2,555	5	744	2,070	
Denmark	51	5,577	58	6,227	3,950	
France	493	55,438	306	37,492	34,841	
Germany	138	13,822	290	32,770	19,307	
Irish Free State	6	503	12	1,197	5,370	
Italy	109	13,375	38	4,864	10,159	
Netherlands	101	9,579	6	781	5,509	
Norway	9	1,265	6	1,093	1,518	
Poland and Danzig	1	75	...	...	64	
Portugal	7	1,573	...	...	1,307	
Rumania	11	1,141	6	373	1,272	
Soviet Russia in Europe	3	600	...	...	220	
Spain	26	3,685	37	5,368	12,568	
Sweden	111	12,431	30	3,132	3,309	
Switzerland	245	25,158	72	11,234	11,291	
United Kingdom	859	99,137	270	36,349	67,195	
Yugoslavia and Albania	31	2,585	6	1,045	3,264	
Canada	2,138	226,192	375	56,853	91,746	
British Honduras	1	129	...	...	...
Costa Rica	4	542	...	...	...
Guatemala	4	708	...	...	69	
Honduras	2	987	1	365	190	
Nicaragua	7	1,267	...	...	51	
Panama	54	11,515	1	180	974	
Salvador	2	431	...	...	26	
Mexico	386	70,180	2	852	6,358	
Newfoundland and Labrador	1	111	1	162	...	
Bermudas	15	2,996	1	138	637	
Jamaica	1	491	...	...	180	
Trinidad and Tobago	10	1,611	...	...	...
Other British West Indies	4	647	...	...	124	
Cuba	147	20,885	25	4,209	8,530	
Dominican Republic	9	1,432	...	...	...
Netherlands West Indies .....	...	...	...	...	281	
Haiti, Republic of	26	4,219	...	...	195	
Argentina	49	7,228	...	...	5,491	
Brazil	65	10,728	5	1,888	4,479	
Chile	7	784	...	...	247	
Colombia	52	9,652	3	772	147	
Ecuador	1	97	...	...	38	
Peru	7	1,549	1	149	194	
Uruguay .....	...	...	5	585	2,541	
Venezuela	126	19,905	3	641	559	
Aden	3	450	...	...	52	
British India	24	3,038	3	1,015	1,817	
British Malaya	30	3,885	4	408	175	
Ceylon	6	1,046	...	...	620	
China	61	9,549	...	...	134	
Java and Madura	18	3,258	2	312	708	
Other Netherlands East Indies	4	760	...	...	69	
French Indo-China .....	...	...	1	280	927	
Hong Kong	78	13,293	...	...	602	
Japan	233	41,954	14	2,218	841	
Palestine .....	...	...	...	...	11	
Philippine Islands	88	15,419	...	...	767	
Siam	40	7,245	...	...	15	
Syria	1	179	...	...	...
Turkey	36	5,683	4	733	168	
Australia .....	...	...	...	...	114	
New Zealand	1	289	1	958	362	
British East Africa	32	4,785	...	...	1,166	
Union of South Africa	10	1,224	...	...	1,147	
Gold Coast	10	1,562	...	...	299	
Nigeria	40	5,783	...	...	...
Other British West Africa	1	115	...	...	...
Egypt	19	3,080	1	151	161	
Algeria and Tunisia	37	3,191	5	535	806	
Madagascar	1	159	...	...	...
Morocco	26	3,346	6	1,788	1,261	
Other Portuguese Africa	2	260	...	...	52	
Total	6,338	\$801,178	1,664	\$224,661	\$331,410	
Shipments to Hawaii	134	20,133	5	1,131	3,425	
Porto Rico	81	14,801	3	1,338	1,947	

WATER COOLERS FOR USE WITH ICE

REFRIGERATION

DEALERS

HERE ARE

PROFITS

FOR

YOU!



If your prospects cannot afford Electric Water Coolers, sell them iced coolers at a fraction of that cost.

Coolers for every purpose.

Write for selling plan.

PERFECTION COOLER COMPANY
Michigan City Indiana

WE BUY New and Used ELECTRIC REFRIGERATORS In Any Condition

Phone, Write or Wire All Details, Type of Motor, Size of Box, Etc.

KASKEY & QUINN, Inc.
525 Arch Street Philadelphia, Pa.

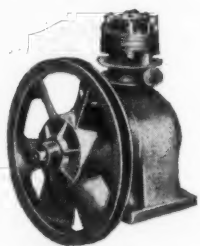


A clear view easy reading thermometer—designed to give the utmost in instrument accuracy and dependability.

Easily interchangeable refill. Nickel plated brass case, not affected by brine.

Carroll Glass Instrument Co.
Philadelphia, Pa.

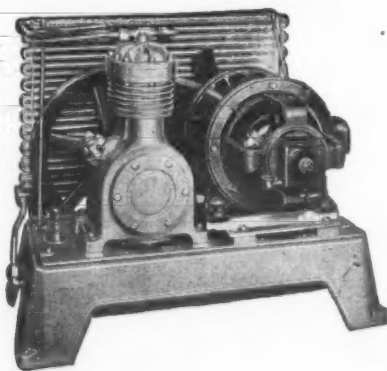
KULAIR Simplicity, quality, efficiency and capacity unequalled.



NO. 1300 COMPRESSOR
Single Cylinder 1½x1½
300 to 425 R. P. M.

Compressors 95 to 4300 Lbs. I. M. C.

A size for every use.



Condensing Units Small Domestic to Large Commercial Capacities

AIR COOLED

WATER COOLED

METHYL CHLORIDE

or

SULPHUR DIOXIDE

POLICIES PRODUCTS PRICES

Providing Proper Profit To All Distributors.

WRITE FOR FULL INFORMATION TO
KULAIR CORPORATION
PHILADELPHIA, PA.

California Distributor Holds First Sales Conference



Dealers operating under Thor-Pacific, southern California Copeland distributor, who assembled to hear W. D. McElhinny, Copeland vice president in charge of sales, and other officials.

FRIGIDAIRE IN BOSTON OPENS BIG QUARTERS

BOSTON—Coincident with the formal opening of its new four-story building at the corner of Blandford and Cunningham Sts. (near Kenmore Square), the Frigidaire Corp. held May Open House celebration at its new headquarters and at the showrooms of all Frigidaire dealers in New England.

The latest move of the Frigidaire Corp. brings the entire Boston organization under one roof at its new Blandford St. home. This expansion marks the second time within a five-year period that the Boston office has been required to secure larger space for its operations.

The first floor has been given over to a display room, a General Motors radio display, a commercial equipment room, an advertising stock room, and a model kitchen. The new kitchen has been equipped with all the most modern conveniences, under the direction of Miss Eleanor M. Lynch, home economist, who will conduct the home service activities. Installation department, parts room, receiving room, and service department occupy the second floor of the new building. The third floor is devoted to school rooms for salesmen, engineering room and miscellaneous activities. The fourth floor is used for sales and general offices.

The Frigidaire Open House was conducted under the direction of John S. Pfeil, assistant manager.

CONNECTICUT COMPANY TOPS QUOTA IN CAMPAIGN

HARTFORD, Conn.—At the end of the tenth week of an 11 weeks refrigeration campaign the Connecticut Light & Power Co. had sold 1,055 Frigidaires or 121 per cent of its quota in 91 per cent of the allotted time, according to W. M. Walsh, merchandising manager.

A similar program conducted last year for the same period of time resulted in the sale of 743 units. The quota set for the 11 weeks campaign this year was 870 Frigidaires.

RADIO DEALERS IN DALLAS ASK REFRIGERATION MEN TO JOIN FORCES

DALLAS, Tex.—Electric refrigeration distributors and dealers here have been invited to join forces with radio dealers in the Dallas Radio Dealers Association.

A resolution favoring this proposal was passed May 18 at a meeting of the Radio Dealers at which a number of refrigeration men were present.

KELVINATOR DEVELOPS NEW APARTMENT SALES PLAN

DETROIT—The Kelvinator Sales Promotion Department, under the direction of Vance Woodcox, has developed a dealer-distributor program for the sale of electric refrigeration to owners of apartment buildings. It is known as "The Increased Earnings Campaign."

STOTZ BROTHERS IN EASTON ADD ELECTROLUX LINE

EASTON, Pa.—Stotz Brothers, who have been doing business in this city for over 40 years, are now distributors for the Electrolux gas refrigerators. Three brothers comprise the partnership.

Fifty New Dealers Announced

LOS ANGELES (UTPS)—Following the first dealer conference held in this city by Thor-Pacific since this company took over the distribution of Copeland refrigerators in southern California. Evan O. Thomas of that organization announced that 50 new dealers have been added within the past month.

About 175 dealers registered for the two-day conference conducted by W. D. McElhinny, vice president in charge of sales of the Copeland Sales Co., at the Elks Club this city, May 14 and 15.

McCLURG JOINS STAFF OF MAYFLOWER DISTRIBUTOR

SAN FRANCISCO—W. E. McClurg has been named as Oregon sales representative for Kierulff and Ravenscroft, Inc., Mayflower distributor for California, Arizona and Oregon, according to an announcement by E. G. Arnold, San Francisco district manager.



W. E. McClurg

Mr. McClurg is well known in coast refrigeration circles, having been associated with the Frigidaire Corp. as distributor in the Oregon territory. He will make his headquarters at 824 Colonial Ave., Portland.

CLEVELAND, DETROIT LEONARD DEALERS HOLD MEETINGS

DETROIT—Officials of the Leonard Refrigerator Co. attended two dealer meetings held recently in Cleveland and Detroit.

In Detroit, Buhl & Son was host to dealers at a conference held May 19 at the Savoyard Club in the Buhl Bldg. Leonard dealers in the Cleveland area turned out for a meeting sponsored May 20 by the Baldwin Stove Co.

Speakers at both meetings were: A. H. Jaeger, vice president in charge of sales of the Leonard Refrigerator Co.; W. W. Garrison, vice president, McCorkin Advertising Co.; A. E. Gibson, Refrigeration Discount Co.; and Harry Underwood, service division, and A. M. Taylor, director of advertising and sales promotion.

PUEBLO DISTRIBUTOR

PUEBLO, Colo.—The Calkins White Brothers Furniture Co. is now Kelvinator distributor for this territory.

EMPLOYEES COMPLETE N. Y. EDISON COURSES

NEW YORK CITY—More than 9,700 employees of local utility companies who have completed one or more courses in the schools of the New York Edison Co. and the Brooklyn Edison Co. received 13,633 certificates, diplomas, and other awards at commencement exercises held at Madison Square Garden Thursday evening, May 28.

Addresses were made by Milo R. Maltbie, chairman of the Public Service Commission, and Matthew S. Sloan, president of the five local electric light and power companies. Mr. Sloan will also presented the diplomas and other awards.

While a majority of those enrolled in the educational courses are employees of the electric companies headed by Mr. Sloan, a number are employed by the Consolidated Gas Co. and affiliated companies. The gross enrollment this year was 22,534, and the total number of employees enrolled was 15,700, some employees taking more than one course.

The 15,700 enrolled were organized in 507 classes, averaging 30 to a class. Class attendance for the year totaled 228,813. Except in a few instances, all instruction was given after hours, on the employees' time.

There were 213 instructors, nearly all of them employees who have practical as well as theoretical knowledge of the subjects they teach. Fifty-two courses were given, 29 technical and 23 commercial and general.

The 507 classes into which the enrolled employees were organized met in 51 class rooms and laboratories at 25 different locations from Brooklyn and Queens to Westchester. Both the technical and commercial courses are designed to promote employee efficiency in service to the public, it was announced. The 29 technical courses are arranged in six groups, one leading to another and each group consisting of from three to nine separate courses. The six groups are: Fundamental and Mathematical Courses; Electrical Laboratory Courses; Electrical System Courses; Meter and Relay Courses; Mechanical Courses, and General Courses. An employee with a high school background, by starting with the fundamental and mathematical courses, which number five, can progress to other groups, which are made up principally of courses on electrical subjects. The 23 commercial courses are arranged in four groups: Organization Courses; English Courses; Hygiene and First Aid Courses, and General Courses. In addition to these 52 courses in which any qualified employee may enroll, the companies conduct job-training courses for special groups as substation men, cable splicers, linemen, metermen and foremen.

The New York Edison School is directed by Prof. F. C. Stockwell, Anson Wood Burchard, professor of electrical engineering at Stevens Institute of Technology and head of the electrical engineering department at Stevens. Prof. Robbins Beach, head of the electrical engineering department at the Brooklyn Polytechnic Institute, heads the Brooklyn Edison Educational Bureau.

NEW MOHAWK DISTRIBUTOR

OMAHA, Nebr.—The National Accessories, Inc., has been appointed distributor for the Mohawk electric refrigerator in this territory, according to Eugene R. Farny, president of the All-American Mohawk Corp. of North Tonawanda, N. Y.

CONSUMERS POWER CO. HOLDS RALLY AT GRAND RAPIDS

GRAND RAPIDS, Mich.—Nearly half a hundred Kelvinator salesmen of the merchandising department of the Consumers Power Co. gathered here recently for a rally and feast. The gathering, under the leadership of

District Manager C. V. Caulkins, was for the purpose of planning the details of the Kelvinator sales campaign in co-operation with the Electric Refrigeration Bureau.

Speakers at the meeting were: Howard Davis of Jackson, merchandise manager of the Consumers Power Co., and W. T. Anderson, assistant sales manager, and Mr. Draper of Grand Rapids.



... confirms the pleasant reputation Hotel Fort Shelby enjoys for its variety of dishes and choicest delicacies. The palate, too, bears tribute to the superb artistry and skill of the Fort Shelby chefs. Four restaurants serve your needs or whim or purse ... all offer breakfast and luncheon ... two are open for dinner. ¶ You'll be delighted, too, with Hotel Fort Shelby's convenient location in the heart of Detroit's shopping, theatre, financial, insurance and wholesale districts. No other large hotel is so near the principal railway terminals, airports and steamship piers. ¶ 900 units ... all equipped with private bath and servitor. Rooms as low as \$3.00 per day ... suites \$10.00 and upwards.



Motorists are relieved of their automobiles at the door without service charge. Write for free road map, and your copy of "Aglow with Friendliness," our unique and fascinating magazine.

Fort Shelby
HOTEL
"AGLOW WITH FRIENDLINESS"
E. J. BRADWELL, Manager
DETROIT

(Concluded from Page 1, Column 4)

Fifty-six others were placed a short time ago in two adjoining apartment houses in Washington, and 24 General Electrics were placed in other buildings. A new apartment building, the Franklin Apartments, at 15th St. and Rhode Island Ave., was equipped with 50 General Electrics.

Two new apartment houses in Albany, N. Y., were equipped recently by apartment house salesmen for Page-Morris, Inc., distributor in that district. One

The above is reproduced from Printer's Ink, May 21.

FOND DU LAC, Wis.—Henry R. Potter, 69, treasurer of the Sanitary Refrigerator Co. of this city, died May 13.

Mr. Potter was president of the Commercial National Bank of this city at the time of his death, as well as secretary, treasurer and director of several other companies.

Ruth W. Oswald of the Riddick Co. and Helen Gwinn of the Knox Gelatine Co., prepared a special display of frozen desserts, gelatine desserts in molds, salads, fish loaves, appetizers, canapes, and sandwich loaves.

6-3-31

STOCK CARRIED AT BOTH POINTS

Only distributors of good financial standing with a dealer following considered. Your enquiry implies no obligation. Address Box No. 331.

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

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DETROIT, MICHIGAN, JUNE 3, 1931

Entered as second class matter
Aug. 1, 1927, at Detroit, Mich.FIFTEEN CENTS PER COPY
TWO DOLLARS PER YEARFOOD LOSSES IN
STORES TOO HIGH,
SURVEY REVEALSRuthenburg Estimates
75% of Spoilage
Is Preventable

DETROIT—Losses of perishable foods in retail stores in the United States amount to more than \$470,127,000 annually, Louis Ruthenburg, president of Copeland Products, Inc., and chairman of the refrigeration division of the National Electrical Manufacturer's Association, told the division May 23 at a meeting held in the factory of the Kelvinator Corp.

"These figures," Mr. Ruthenburg pointed out, "are for the better class of stores with rapid turnover of stock. The nation's food bill is placed at \$22,387,000,000. Upon good authority it is stated that 70 per cent of our foodstuffs are perishable. It is conservatively estimated that the loss in perishables is three per cent, or the staggering total of \$470,127,000.

"This enormous amount includes retail losses only. It does not include losses in the hands of consumers, wholesalers, jobbers, or producers.

"These figures are not available at this time, but it is reasonable to expect that the losses in those sources will exceed those of the retail stores. By far the larger part of this loss is preventable, possibly as much as 75 per cent.

"In endeavoring to comprehend the immensity of the losses in perishables, due to inadequate methods of handling this type of foodstuffs, we are over-

(Concluded on Page 3, Column 1)

WILSON NOW HEADS
BATCHELDER, SNYDER

BOSTON—J. E. Wilson has been elected president of Batchelder, Snyder, Dorr and Doe Co., packers of Birdseye quick-frozen meats, to succeed Frederick S. Snyder, resigned.

Mr. Wilson was formerly general superintendent of the New England territory for Armour & Co. and joined the Batchelder and Snyder organization eight years ago.

Other officers elected include W. S. Stanley, vice president and treasurer; J. I. Chick, vice president in charge of operations, and E. B. Crissey, vice president in charge of sales.

A. & P. OPENS ICE CREAM
DEPARTMENTS IN STORES

NEW YORK CITY—A. & P. is planning to open ice cream departments in all of its stores in New York, Chicago, Philadelphia and Northern New Jersey, officials announce.

The ice cream will be sold under its own brand name, Yukon Club.

It will be kept in visible, refrigerated show cabinets in sizes from 30 in. sq. up to 30 in. deep by five or six ft. long, depending on the store in which the cabinet is placed. All of the ice cream will be sold in packages.

The chain will not manufacture its own ice cream unless forced to, but will buy it from established manufacturers.

NEW JERSEY CO. TO MAKE
FOOD PRODUCTS

PLEASANTVILLE, N. J.—With a capital stock of \$1,000,000 the New Jersey Dehydrating Co. has been chartered to manufacture food products. William H. Bozarth, James D. Pasquale, John Zassazza and E. H. Sawyer of Vineland, and Nossis L. Carty made application for the charter.

KROGER BUYS 26 STORES
IN MEMPHIS AREA

CINCINNATI—Twenty-six store units of Clarence Saunders Stores, Inc. in Memphis have been purchased recently by Kroger Grocery & Baking Co. The purchase was awarded to Kroger following its bid of \$135,000.

Testing Appeal of Frozen Foods Packages



Robert Gair Co., manufacturer of packages, installs frozen foods case in New York laboratory store.

COOPERATIVE MARKET
USES \$25,000 SYSTEM

WILLIAMSPORT, Pa.—Copeland, Percival and Seeger equipment, valued at \$25,000, handles the job of cooling perishables sold in the new Williamsport Growers Market House.

Opening a short time ago, the big market place, housed in a building 200 ft. wide and 208 ft. deep, uses some 208 ft. of Percival refrigerated cases to display food products. Twenty of the Percival cases are of 8 ft. lengths, while three of the larger cases are of 16 ft. lengths.

The display cases are arranged so that shoppers can easily purchase all food supplies under one roof.

Seeger refrigerators are used in some

(Concluded on Page 2, Column 5)

Changes Planned In
New Orleans Marts

NEW ORLEANS—The New Orleans public markets are to be made into objects of civic attractiveness, according to a plan worked out by A. Miles Pratt, chairman of the rehabilitation committee of councilmen, which goes into effect early in June.

The Dryades market, largest in the city, will be the first to undergo the extensive work of rehabilitation. The bids were opened June 2, and work will start immediately and be completed in about 90 days as estimated by Sam Stone, architect in charge of the work.

It is estimated that improvement to the Dryades market will cost approximately \$125,000, the plans to be carried

(Concluded on Page 3, Column 1)

QUICK-FROZEN ICE
CREAM ANNOUNCED

DETROIT—Quick freezing at temperatures way below the zero mark has invaded the ice cream industry. Marketing of a new product, known as "fast frozen" ice cream, has been started in this city by the Gabel-Risdon Creamery Co., Inc., a division of the Borden Co.

The new ice cream, which is being widely advertised in daily newspapers and outdoor posters, is quick-frozen by the cold air blast method in hardening rooms maintained at a temperature of 40° below zero.

Under the new process, officials of the company state that freezing time for packaged ice cream, which formerly required hours, has been reduced down to

(Concluded on Page 2, Column 5)

BUFFALO FOOD
TERMINAL SHOPS
BUY EQUIPMENTMammoth Market Has
19 Refrigeration
Systems

BUFFALO—One of the country's largest refrigeration installations for food preservation was made at the Niagara Frontier Food Terminal, recently completed on a 60-acre site at Clinton St. and Bailey Ave. here.

The market, developed by the Erie and Nickel Plate Railroads, is said to be one of the largest of its kind in the United States. Costing approximately \$3,000,000, it provides 10 two-story and basement fireproof buildings, each a complete market in itself.

The present group of buildings provides 44 stores for produce, 12 stores for butter and eggs, and 4 stores for poultry. Opposite the main market building on Clinton St. is a 20-acre parking space for the accommodation of 750 farmers' trucks. In the rear of the buildings the railroad has constructed a 22-team track of 350-car capacity with additional trackage for the holding of 800 cars.

Because of the varying demands of the different foods and the location of the market buildings, it was decided to install complete systems in each of the 19 stores using refrigeration, instead of a central refrigerating system.

Frick compressors are used throughout with Grinnell unit coolers, except the zero degree rooms in which galvanized iron pipe coils are used. The installation was made by the Mollen-

(Concluded on Page 2, Column 1)

GAIR CO. TESTS NEW
PACKAGES FOR FOODS

NEW YORK CITY—The use of practical laboratory methods in developing and testing new package designs has just been initiated by the Robert Gair Co. with the installation of a complete retail store unit in one corner of its executive offices at 420 Lexington Ave.

Using standard equipment of one of the large retail chains, this store has built-in shelves, counter, and a new frozen foods refrigerator display case. The store is stocked with packages in paper, tin, and glass, just as these products would be placed in a regular retail store.

The refrigerator display counter, which maintains a temperature of about 10 degrees above zero, is being used to test not only the display value of packages, but also to work out answers to some of the mechanical problems involved in devising satisfactory containers for frozen foods.

Into this store come the samples of new container designs after they have run the gauntlet of artists, package engineers, business executives, advertising agency men, and others, to take

(Concluded on Page 2, Column 5)

HILL GROCERY CHAIN BUYS
11 SAUNDERS STORES

BIRMINGHAM, Ala.—The Hill Grocery Co., largest grocery chain of stores in Alabama has purchased 11 bankrupt Clarence Saunders stores in the Birmingham and Montgomery district.

Six of the stores and warehouses are in immediate Birmingham, three in Montgomery and one in Anniston and Gadsden.

Each store is being remodeled to conform with the Hill policy and in some cases new fixtures are being installed.

KROGER TO SPEND ONE MILLION
DOLLARS FOR EQUIPMENT

CLEVELAND—One million dollars will be spent for new equipment and store improvements in the Cleveland territory by the Kroger Grocery & Baking Co. during the next eight months.

This announcement was made by P. E. Bruce, managing director of the Cleveland branch of the Kroger Co. which operates 365 stores in that area.

Help Yourself to Food



Self-service display cases, designed by L. O. Garner and built by the Warren Co. of Atlanta. Foot pedals cause the door to drop down, so that a customer can select the package which is wrapped in cellophane, weighed and priced. When the customer removes her foot the door closes automatically.

BUFFALO TERMINAL HAS MANY SYSTEMS

(Concluded from Page 1, Column 5)
berg-Betz Machine Co. of this city, dealer in refrigerating machinery.

The National Fruit and Produce Co., which is the largest produce dealer in the market, has 2 walk-in coolers located in the basement of the store in which they store 84,000 lbs. of fruit and vegetables daily at a temperature of about 32°. Four unit coolers in each of the 2 rooms are operated by an 8-ton compressor.

Hickman, Coward and Wattles, dealers in poultry, butter and cheese have the largest refrigeration system in the market. An 8-ton compressor refrigerates 2 zero deg. walk-in coolers located on the first floor, in which 30,000 lbs. of frozen poultry are stored.

These coolers are equipped with galvanized iron pipe coils. Two basement walk-in coolers, having 2 unit coolers each, and 2 first floor walk-in coolers, one having 3 unit coolers and the other equipped with 1 unit cooler, are used to store 90,000 lbs. of butter and cheese at 34°. All are operated by a 12-ton compressor.

Bredenberg Brothers have 3 walk-in coolers, all located on the first floor, which are run by a 4-ton compressor. A cooler, refrigerated with galvanized iron pipe coils, is used to store frozen poultry and eggs. The other 2 walk-in coolers, one having 2 unit coolers and the other 1 unit cooler, cool 20,000 lbs. of butter and eggs.

John E. Shintzius stores 20,000 lbs. of produce in a basement walk-in cooler equipped with 2 unit coolers operated by a 3-ton compressor.

Franklin F. Schafer, orange merchant, has a walk-in cooler in the basement of his store for storing 20,000 lbs. of oranges. Two unit coolers and a 4-ton compressor refrigerate the cooler.

\$25,000 Worth of Equipment in this Food Mart



Copeland, Seeger and Percival equipment is used throughout the new Williamsport Growers Market House.

Buffalo Butter and Egg Co. has 2 walk-in coolers, one for storing 20,000 lbs. of butter and eggs. Both are hooked up to a 4-ton compressor.

Satuloff Brothers, Inc., has 2 basement walk-in coolers storing 22,000 lbs. of poultry. One is used to store frozen chickens and the other is used to keep fresh poultry. Both are operated by a 4-ton compressor.

Bierma and Kendrick have a walk-in cooler, located in the basement of the store, in which 2 unit coolers were installed to cool 20,000 lbs. of produce

daily. A 3-ton compressor handles the job.

F. Brennon and Son have a 4-ton compressor connected to 2 walk-in coolers in which 30,000 lbs. of fruit and vegetables are stored.

Sherman Bunshaft, fruit and vegetable dealer, stores 15,000 lbs. of produce in his basement walk-in cooler. A 2-ton compressor and a unit cooler maintain a temperature of about 32°.

George R. Whitney, Inc., uses a 4-ton compressor to refrigerate 3 walk-in coolers in which 30,000 lbs. of butter and

eggs are stored. Four unit coolers were installed, 1 in each of 2 walk-in coolers and 2 in the third.

In William W. Burrell's store, 2 unit coolers and a 4-ton compressor maintain the proper temperature in the walk-in cooler for the keeping of 20,000 lbs. of produce.

Joseph Infantine refrigerates 25,000 lbs. of oranges in a basement walk-in cooler, hooked up to 2 unit coolers and a 4-ton compressor.

B. Eberhardt and Son have a walk-in cooler in the basement of the store for 7,000 lbs. of produce. A unit cooler and a 1-ton compressor are used.

Fred W. Kiefer's supply of fruit and vegetables is placed in 2 walk-in coolers in the basement. He stores 20,000 lbs. daily at a temperature of 32°, maintained by a unit cooler in each room run by a 4-ton compressor.

Leon Brothers, Inc., use a walk-in cooler to store 15,000 lbs. of produce. The cooler is equipped with a unit cooler and a 2-ton compressor.

Frank E. Wattles has 2 walk-in coolers in which he stores 20,000 lbs. of butter and eggs. They are run from a 4-ton compressor.

Bell Packing Co. stores 20,000 lbs. of meat daily in its walk-in cooler on the first floor of the market. It is equipped with Reliance finned coils and a 4-ton compressor.

The Kraft-Phenix Cheese Co. has 2 walk-in coolers in which 30,000 lbs. of cheese are stored. A 4-ton compressor and a unit cooler handle this job.

KANE CORP. MANUFACTURING REFRIGERATED TRUCKS

PHILADELPHIA—Following a long association with the electric appliance and radio trade, John V. Kane is now affiliated with the Kane Body Corp. N. W. corner 17th and Lehigh Ave., where a plant has been acquired for the manufacture of refrigerated truck bodies.

Several delivery trucks in the fleet of the Breyer Ice Cream Co., Phila., Mammoth Ice Cream Co. of Asbury Park, N. J., and several other local manufacturers' truck in special bodies were built by the Kane Corp.

COOPERATIVE MARKET USES \$25,000 SYSTEM

(Concluded from Page 1, Column 2)
of the market stalls in conjunction with the display equipment.

Both the cases and refrigerators are cooled by six Copeland compressors, which were installed along with the Percival and Seeger equipment by the Neyhart Hardware Co. of Williamsport.

Four Model XA1200, 1 Model WA and 1 Model Q condensing units operate the Larkin coils in the cases and refrigerators. In one instance, a 16 ft. display case and a refrigerator in the Ross Shook shop is about 250 ft. away from the battery of compressors. According to P. H. Lehman of the Neyhart refrigeration department, a temperature of 38° in the case and 36° in the refrigerator are being maintained satisfactorily.

DETROIT DAIRY MARKETS 'FAST FROZEN' ICE CREAM

(Concluded from Page 1, Column 4)
15 to 18 minutes. Fast freezing, they claim, produces smaller crystals in the ice cream, which do not conceal the flavor.

This process, it was stated, produces small crystals similar to those obtained in the quick-freezing of fish, meats and vegetables.

The hardening room for the "fast frozen" ice cream is heavily insulated and well baffled to maintain the low freezing temperature by the cold air blast method. No extra refrigerating machinery is required as only changes in construction of the hardening room were necessary.

At the present time a larger hardening room is under construction at the Dexter Ave. plant and it is expected to be in operation in about 30 days.

No changes in retailers' equipment, officials of the company said, were made to handle the new product, as it can be stored in cabinets at a temperature near the zero mark.

GAIR ORGANIZATION TESTS PACKAGES IN OWN STORE

(Concluded from Page 1, Column 5)
their place among older packages which have established themselves in their respective fields.

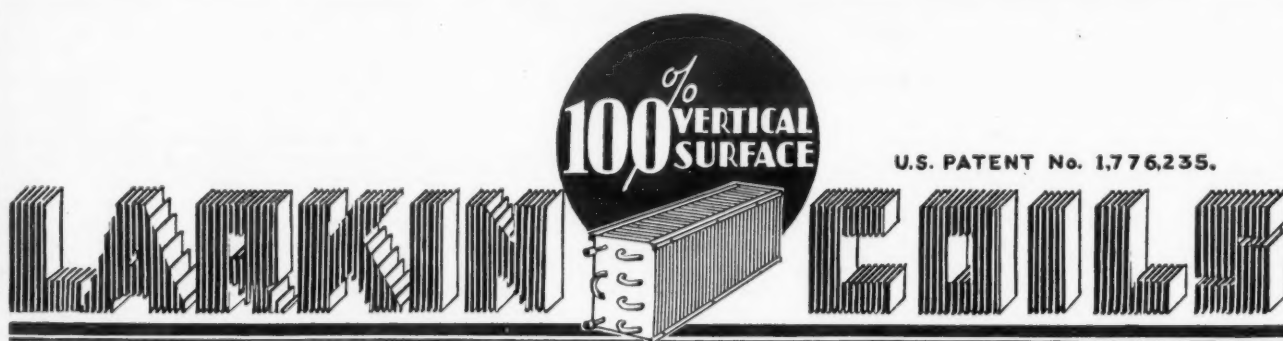
Before this stage is reached the package engineers have determined the efficiency of the package from the standpoint of mechanical design and economy; and the tests which follow concern themselves mainly with the advertising quality of the container, its sales appeal, and other points involving customer acceptance.

Recently one of Dale Houghton's classes in advertising from the School of Commerce of New York University made a series of tests on coffee and tea packages in which an answer was sought to the question of color appropriateness for these products.

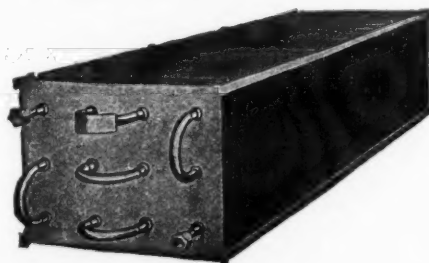
CLEVELAND CHAIN EXPANDING

CLEVELAND—Fisher Grocery Chain, large user of refrigeration equipment, has continued on its policy of expansion, by opening new stores at 10413 Superior Ave., and 11307 Euclid Ave.

In cities adjacent to Cleveland, stores have been opened in Willoughby, Chagrin Falls, Bedford, Medina, Elyria, Lorain, Amherst and Oberlin.



FOR ELECTRICAL REFRIGERATION



Larkin Coils are Solving Greatest Problems in the Low Pressure Field Today

They Banish Dehydration and Defrosting Problems and Eliminate the Costly Problem of Servicing

LARKIN COILS have secured national acceptance because they positively eliminate dehydration and defrosting problems. They are so efficient that the costly problem of servicing becomes a negligible factor. These features make LARKIN 100% Vertical Surface Aluminum Plate COILS a necessary aid to lower cost, better and trouble-free electrical refrigeration. That is why they are approved nationally by manufacturers, distributors and consumers. Larkin Coils are made in 93 standard sizes—every commercial need covered. Immediate shipments made from this, the largest coil line manufacturers on the market. Detailed information may be had from manufacturers listed below or direct from originators and sole manufacturers.

LARKIN-WARREN REFRIGERATING CORPORATION

ATLANTA

Originators and Manufacturers

GEORGIA

Copeland
DEPENDABLE Refrigeration
DETROIT, MICH.

Larkin Coils are standard factory equipment with many manufacturers, some of whom are listed here. They must have wonderful advantages to earn these powerful endorsements!

Absopure
DETROIT, MICH.

UNIVERSAL
DETROIT, MICH.

SERVEL
Electric Refrigeration

B-K, Junior
New Brunswick, N.J.

Zerozone
Lifetime Refrigeration

KULAIR
PHILADELPHIA, PA.

Wayne
FORT WAYNE, IND.

ICE-O-MATIC
BLOOMINGTON, ILLINOIS

JACK FROST
REFRIGERATION, LTD.
TORONTO-CANADA

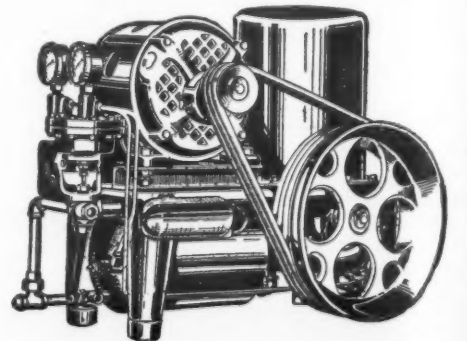
TRUPAR
DAYTON, OHIO

Modern

POTTER
PORTLAND, O.

Electric-Automatic REFRIGERATOR
PHILADELPHIA

PROFIT OR LOSS



For the Butcher, Restaurant, Florist or other merchants, Excelsior Refrigeration may mean the difference between profit or loss—success or failure in business. Modern retail business is handled on a close margin and merchants must meet the keen competition with modern equipment and more efficient methods.

Excelsiors have proven their ability to provide better refrigeration at lower cost, eliminate spoilage losses, enable the handling of larger quantities and greater varieties, satisfy old customers and attract new trade.

Excelsior's powerful sales appeal offers an exceptional opportunity for energetic refrigeration dealers. May we send you further details?

THE CARBONDALE MACHINE CO.

Main Offices, CARBONDALE, PA.

Address inquiries to Excelsior Division, South Norwalk, Conn.

'FOOD STORE LOSSES HIGH' -- RUTHENBURG

(Concluded from Page 1, Column 1)

whelmed with figures so large that the mind cannot grasp them," Mr. Ruthenburg stated.

"The food industry far outdistances any other industry," said Mr. Ruthenburg. "The automobile industry is next in size. Great as is the automobile industry, it is but a pygmy in comparison with the food industry."

"In 1930, the wholesale value of automobiles, exclusive of motor trucks, is estimated at \$1,771,200,000. In 1929 the value of the automobile output was \$2,981,141,842."

"Compare this figure with that of the United States Census in 1929, which gave the factory value of foodstuffs at \$15,088,912,576, or approximately 5½ times the size of the automobile industry."

"The total sales of the 12 largest grocery chain systems in the United States in 1930 is placed at \$2,116,044,606."

"Losses of various fruits and vegetables through evaporation and deterioration run as high as 25 per cent in the case of certain products. Our investigation reveals that 5 per cent is a low estimate of the loss for fruits and vegetables as a whole in retail stores."

"On the total volume of \$2,307,000,000 of fresh fruits and vegetables, this represents a loss of \$115,350,000 on these two classes of food alone, or approximately \$461 per store based on the losses of the better stores only. What the loss amounts to in the case of the less efficient stores is impossible to say at this time."

"Of course, a great deal of this loss is unpreventable. However, fruit and vegetable shippers generally agree that with proper refrigeration it can be very substantially reduced."

"The shippers in practically all cases refrigerate the fruits and vegetables which they send to market, and would like to see this refrigeration maintained to an equally efficient degree in the retail stores for the preservation of these products."

"It would result in more attractive merchandise for the housewife and consequently an increased volume of sales."

"One of the best known authorities on the subject estimates that the shrinkage in cured pork, by weight alone, is 1.88 per cent per week. Based on retail prices this loss amounts to \$52,942,680 per year to the retail trade."

"Another authority, known to be extremely conservative, states that the loss in beef, veal and lamb through shrinkage in wholesale and in the exposed surface of retail cuts exposed for sale amounts to 1.25 per cent in the retail store. At retail prices this represents an annual loss of \$28,323,750 annually in the United States."

"Information from the most reliable sources points to a loss of one egg out of each dozen in the distribution process due to improper care and that the greater part of this loss occurs in retail stores."

"Assuming that only one-half of this loss takes place in the retail stores, the loss resulting from shrinkage and improper refrigeration reaches the total of \$17,000,000 on a retail value of \$400,000,000 of eggs sold each year in the United States."

"The retailer of foodstuffs is, at present, taking these losses as a matter of course, simply because they have always been losses, when by a modest investment he could stop the greater part of it, using the money actually saved to pay for the investment—which would require but a short time."

"With these losses stopped and the equipment paid for, the losses he previously suffered become cash profit. Besides, he is further building up his business because he is supplying his customers with a much better grade of perishable foods than before."

"They are better preserved, they are better in appearance and they have lost none of their firmness and crispness because they have retained their natural content of moisture."

NEW ORLEANS LAUNCHES MARKET IMPROVEMENTS

(Concluded from Page 1, Column 3)

out without appreciably altering the architectural appearance of the building."

In the butcher's stalls the display cases will be of triple thickness glass and each butcher will be provided with a large refrigerator for extra stock."

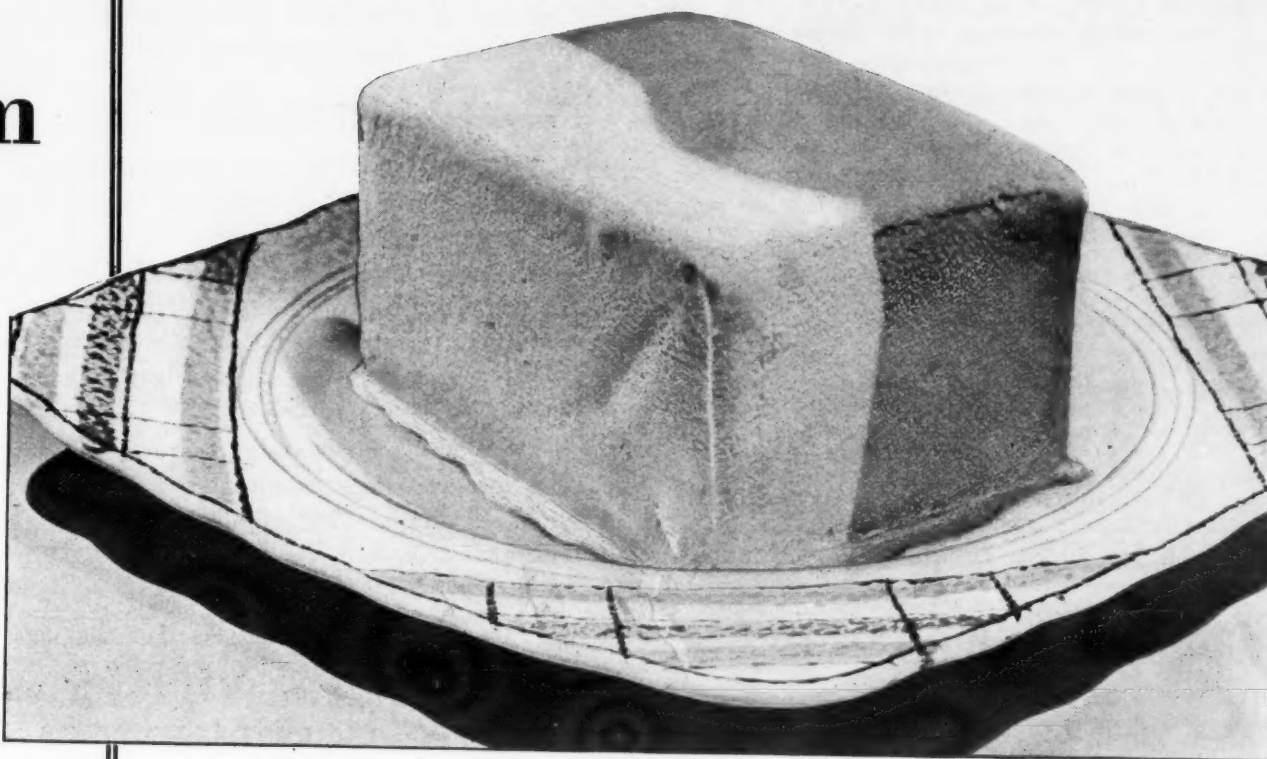
The fish market will occupy the space now used for cold storage. Tiled floors will facilitate cleanliness and all containers will be enclosed to insure proper sanitation."

A ventilating system will also be installed to keep the air fresh at all times."

It is planned to keep the market open during the rehabilitation period, shifting the tenants as the work progresses."

The program for the Dryades market is to be repeated as nearly as possible in the rehabilitation of the city's other markets."

**Ice Cream
needs
more than
flavor**



Photograph Courtesy of Abbotts Dairies, Inc.

INSULATION needs more than "low conductivity"

BY all means, insist that the insulation you select have a low coefficient of thermal conductivity. But don't stop there. Be sure that it will resist moisture and will not deteriorate in efficiency. See that it is strong, rigid, light in weight and easy to install. For good insulation must have all these qualities.

If you judge insulation by these standards you'll find one material that stands out—Armstrong's Type LK Corkboard. Properly installed, this light-weight, efficient insulation meets the severest requirements.

Low conductivity? Armstrong's Type LK Corkboard has a coefficient of thermal

conductivity of only .263 B. t. u. per square foot, per inch thickness, per degree Fahrenheit temperature difference, per hour, at 60° F. mean temperature. Moisture absorption? Cork's resistance to moisture has been demonstrated not only by laboratory tests but also by many years of actual service. Strength? Type LK Corkboard is a rigid board that cannot settle in use. And its weight is 20% less than that of standard corkboard.

We will gladly send you samples of Armstrong's Type LK Corkboard for tests. And Armstrong engineers are at your service—their knowledge and experience are yours to command for any refrigera-

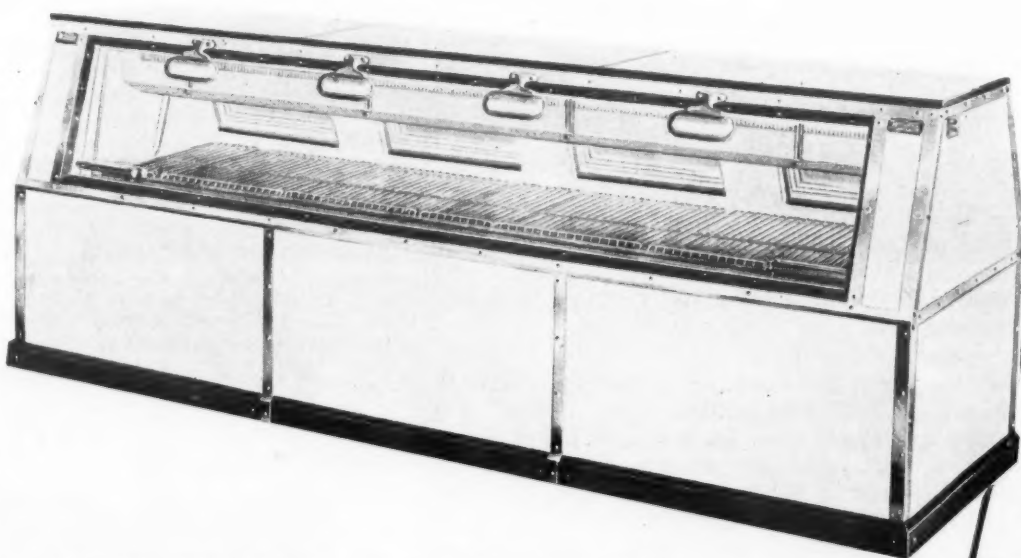
tion problem. Address Armstrong Cork & Insulation Company, 917 Concord Street, Lancaster, Pennsylvania.

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Twenty-eight Armstrong Cork & Insulation Company branches at the following cities are ready to serve you. See Telephone Directory for street address of the branch office nearest you.

Albany, N. Y.; Atlanta, Ga.; Birmingham, Ala.; Boston, Mass.; Buffalo, N. Y.; Charlotte, N. C.; Chicago, Ill.; Cincinnati, Ohio; Cleveland, Ohio; Dallas, Tex.; Denver, Colo.; Detroit, Mich.; Grand Rapids, Mich.; Houston, Tex.; Jacksonville, Fla.; Kansas City, Mo.; Memphis, Tenn.; Milwaukee, Wisc.; Minneapolis, Minn.; New York, N. Y.; Omaha, Neb.; Pittsburgh, Pa.; Rochester, N. Y.; St. Louis, Mo.; Syracuse, N. Y.; and in Canada—Montreal, Toronto, Winnipeg.

Armstrong representatives are located in the following cities: Baltimore, Md., John R. Livezey; Los Angeles, Cal., Gay Engineering Corporation; New Orleans, La., H. T. Steffee; Philadelphia, Pa., John R. Livezey; Spokane, Wash., D. E. Fryer & Company; Portland, Ore., Gillen-Cole Company; San Francisco, Cal., Van Fleet-Freear Company; Seattle, Wash., D. E. Fryer & Company; Washington, D. C., John R. Livezey.



This commercial display case manufactured by The Warren Company is insulated with Armstrong's Corkboard. Here the insulating material was specified for low conductivity as well as for its other superior features.

★ Star these 6 questions when you buy insulation:

- ★ Is it an efficient barrier to heat?
- ★ Will it resist moisture?
- ★ Will it serve without warping, shrinking, buckling, or settling?
- ★ Will it resist decay and deterioration?
- ★ Has it structural strength?
- ★ Is it permanently reliable?

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Armstrong's TYPE LK Corkboard Insulation
Efficient and Practical Insulation for Refrigerating Equipment

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The Business Newspaper of the Refrigeration Industry
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The Expanding Dairy Market

ONE of the most obvious markets for refrigeration is the dairy industry. Milk and milk products are so highly perishable, and offer so favorable a medium for the multiplication of bacteria, that adequate refrigeration is absolutely necessary in the transportation, storage, and final distribution of dairy goods.

Time was when a family could own its own cow. Milk was consumed as it was produced; the women-folk made their own butter and cheese; and the cellar or the cistern provided the nearest approach to refrigeration.

With the centralization of industry, however, has come the massing of people in cities. And with the aid of refrigeration (which has made possible the feeding of the metropolitan multitudes), a mammoth industry has arisen. This industry gathers up milk from hundreds of dairy farms, transports it to milk stations, pasteurizes and delivers some of it, makes butter, cheese, ice cream, and other products from the rest of it. All of these steps from cow to consumer require various types of refrigeration.

Millions of Dollars

Organizations such as the National Dairy Products Corp., the Borden Co., and the Beatrice Creamery Co. have attained such proportions that their annual sales run into hundreds of millions of dollars. Competition is keen. Smaller companies are being acquired by the larger corporations in greater and greater numbers. And because milk is so important an item of food, the dairy industry has marched steadily ahead during the depression period.

Research departments of these large dairy companies are continually devising new ways and means of cutting costs. Most of these methods of saving money seem to involve refrigeration. And because of the magnitude of their operations and the pressure of competition, these large dairy concerns do not hesitate to invest in the equipment their engineers tell them they need.

Quick-Freezing

Two recent developments call for the use of quick-freezing. The National Dairy Products Corp., largest in the dairy industry, is now marketing quick-frozen orange juice on its milk routes in many cities. This orange juice is squeezed and frozen in Florida by a subsidiary, the National Juice Corp., transported in refrigerated cars to the cities in which it is being marketed, cold-stored, and delivered with the morning's milk.

The Borden Co., biggest rival of National Dairy Products Corp., is advertising "fast-frozen" ice cream. Claimed for this ice cream is smoothness of texture resulting from smaller crystals.

From farm milk-cooling units up to quick-freezing machinery, refrigeration equipment of many descriptions is in demand by the dairy industry. New standards are being required of refrigerated transportation by the dairies, to facilitate their far-flung distribution, and to handle their new and improved types of products. Refrigerated

railroad cars and refrigerated trucks are being studied by many refrigerating engineers now, and indications point toward some innovations in that field in the near future.

Cooperative Research

It is fortunate for the refrigeration industry that the dairy companies, who comprise one of the most important industries in the nation, are dependent upon refrigeration. It is also fortunate for the refrigeration industry that the dairy market seems to be continually widening, that new uses for refrigeration in handling milk and milk products are being evolved.

Continued cooperation between the engineers and research departments of the two industries should result in a bigger market for refrigeration equipment, as well as reduced distribution costs for dairy products.

GLEANINGS FROM CURRENT PERIODICALS

"An examination of an attractive case of ready-cut quality meats; a glance through the catalog for the One Hundredth Anniversary of the S. S. Pierce Co., and a sample of the egg menu of the Maryland Club of Baltimore are all evidences that we are just in the primary stages to learning how to merchandise foods.

"Pretty much all of our selling to date has been devoted to offering food in crude form or in some shape that we wished to deliver it to the consumer.

"Now we are learning that the American table wants an infinite variety of attractive foods; and the merchandising of tomorrow will be to determine what these foods are, and then packaging them and offering them in the form that will fit the individual tastes and requirements of the American housewife.

"The ready-cut meats look more appetizing than the old theory of a hand workman in a butcher shop. The Pierce catalog lists hundreds of foods which sound appetizing, but have been reserved for a limited clientele. The special menu of the Maryland Club lists 20 ways to offer eggs in association with foods to add to the appetite appeal.

"We have gone a long ways from the old days of mush, ham and eggs and fried potatoes, but some time in the near future we will look back at 1931 and think of it as the period when we were starting to learn how to merchandise foods."

—The Food Institute.

"Besides her conditioned-air unit, the future housewife will insist on an adequate refrigeration plant, whether gas or electric, because much of the food that she now purchases in cans will be replaced by quick-frozen foods having the properties of those fresh from the garden.

"The secret here is to freeze fish, meat, strawberries, orange juice, and other products so quickly that only small ice crystals are formed, and hence the cells and tissues are not injured. That they will taste just the same as fresh food upon being thawed appears doubtful to gastronomes who, at present, will have nothing to do with cans.

"In any case, frozen foods deteriorate very quickly after thawing, and it will be necessary for the butcher, the grocer, and the housewife to care for them with adequate refrigeration.

"For the last 15 years, wells of carbon dioxide gas in Mexico and elsewhere have been allowed to blow off because the gas had no value as fuel. One of them discharged about 1,000 tons of carbon dioxide a day from 1916 to 1927. Today, liquid and solid carbon dioxide (DryIce) are found to be valuable refrigerants. They can be shipped all over the continent with little evaporation, as a ready means of preserving foods."—Fortune.

"The American people are drinking non-intoxicating beverages to an ever-increasing extent, according to the Food-stuffs Division of the Bureau of Foreign and Domestic Commerce. In a summary of available information on beverages and fruit juices the Division states that there has been a constant and rapid increase in the output of bottled and carbonated beverages.

"Citrus fruit juices are becoming increasingly important as a beverage and it is likely that the output of these juices will increase, and as processes are developed for preparing and preserving fruit juices, it is probable that more kinds of fruits will be used for the preparation of fruit juices for beverage purposes, the Division predicts.

"The value at the factory of soft drinks increased from \$228,729,867 in 1923 to \$256,968,574 in 1929. This includes, it is pointed out, only about half of the 7,500 manufacturers of bottled carbonated beverages in the United States. The greatest increase in consumption has been in the field of carbonated beverages, the manufacture of which has increased almost 100 per cent since 1921. The production of still beverages and fruit juices has increased about 27 per cent in value, whereas the manufacture of cereal beverages has decreased about 63 per cent in the same period."

Domestic Commerce.

"Walgreen's sales of chocolate malted milks at its fountains during 1930 aggregated \$1,240,000. Nearly 6,200,000 individual sales were made at a price of 20 cents each."—Wall Street Journal.

An Editor on Wheels

Stories of Interesting PLACES in the Refrigeration Industry

By GEORGE F. TAUBENECK

Cleveland, Ohio

Bohemian restaurants are increasing like members of a Bohemian family in Cleveland just now. It takes a native Clevelander to find some of these bizarre food establishments, but when one has finally located and passed through the portals, the "atmosphere" one finds repays the efforts one has expended in gaining admission.

Food in a Bohemian restaurant is usually as rich as it is unfamiliar in appearance. You shut your eyes, wield a spoon, and put your trust in the Lord. Surprising enough, the stuff is often tasty and satisfying.

Cheap taxicabs are another interesting feature of Cleveland today. No matter how many times the occasional visitor uses a cab in this city, the fare charged always seems like a mistake.

Cabs seem always available, and are usually comfortable. For skittish and nervous persons, however, they are not recommended. Apparently working on the theory that speed and quantity (number of trips) will make up for low rates. Cleveland cab drivers act like they are tuning up for the Indianapolis races on every trip.

From seemingly inextricable jams and tie-ups they emerge on one wheel and a mountain of faith. "Weaving" is the great outdoor pastime of these would-be Billy Arnolds. Cheap transportation, cheap thrills, cheap lives.

Dayton, Ohio

In the development of America's industrial civilization, the city of Dayton is of considerable historical significance.

It was here that the Wright brothers made the flights which marked the beginning of successful transportation by heavier-than-air machines.

It was here that John H. Patterson, after 40 years of nonentity and obscurity, took over a laughing-stock business proposition (a cash register factory), "invented" specialty selling, and not only made the National Cash Register Co. an industrial structure of national importance, but planted the seeds of many other successful establishments.

It was here that a devastating flood resulted in the birth of the commission and city manager plans of municipal government, which give great promise of bracing up the weakest spot in the American democratic system.

Historical background—and the consciousness of its importance in the scheme of things—often makes for sophistication, for aloofness.

This is not true of Dayton. It is still essentially a small town in spirit.

It is not provincial, its outlook is not narrow; but its neighborliness, and the interest of its citizens in each other and each other's business, immediately identify it with Main St.

Men halloo to each other across the street. Women gossip in backyards. Anybody can give you correct directions to any place you want to go, and usually knows somebody there.

And unlike the true city dweller—who will actually refuse a \$10 gold piece if offered to him gratis by a stranger, and whose most common answer is: "Oh, yeah?"—a large portion of Dayton's citizenry still believes in Santa Claus.

Cincinnati, Ohio

From a quick glance at Cincinnati one gets the same impression one does when plumped down in downtown Manhattan. Mere man is compressed by the works of man.

Downtown Cincinnati, like downtown New York City, seems compressed, jammed, overawing.

Cleveland is spread out, has vacant spots, is roomy.

Chicago is big and solidly built, but is efficiently planned and moves so fast that one doesn't notice its crowded condition.

Detroit has yawning gaps in its business section, and also moves fast.

Atlanta looks as if some giant had gathered up a huge handfull of build-

ings of all sizes and then dropped them helter-skelter upon the earth, letting huts fall beside office buildings, old mansions beside bungalows.

In Cincinnati, as in Manhattan, the pedestrian is constantly conscious of the compactness, the bulk and the solid front of his surroundings.

Another hasty impression of Cincinnati: news travels fast.

The writer found a plant there in turmoil upon visiting it soon after the foreman had been murdered by a drunken night watchman. Returning to my hotel, I found newspapers on sale telling the complete story, accurately and well.

In Atlanta—again this is a single and hasty impression—the editor on wheels had a different experience.

Lillian Roth, luscious young movie actress, was staying at the same hotel. On a Saturday morning Miss Roth eloped. Being a reporter by inclination as well as by profession, I got the story.

Like a collie dog carrying home safely a small basket of groceries, I proudly bore my story to an Atlanta paper.

My reception there was something like that of the penurious suitor from across the railroad tracks asking for the hand of the daughter of the president of the First National Bank. The gentlemen of the press weren't interested. They knew better. Lillian Roth wasn't even engaged.

Not until Monday, some 48 hours after Miss Roth acquired a young husband, did the story appear in any Atlanta paper.

Champaign, Ill.

Center of the electrical power industry of the United States, home of the University of Illinois—where many good engineers are turned out year after year, near Chicago, near Springfield (the state capitol), and right in the middle of the great prairie farming area, the twin cities of Champaign-Urbana present a study in heterogeneity.

From all parts of the globe come students to the many colleges and departments of the state university, which has an enrollment of more than 11,000.

Farmer's sons from Willow Hill rub elbows with gangster's sons from Cicero. Bright-eyed Boxer-indemnity scholars from China converse in smoke-hazy confectionery booths with olive-skinned Yogi adherents from India, appalled Oxford graduates, jolly physicists from Heidelberg, and bored co-eds from Peoria.

Soy bean experiments are carried on side by side with photo-electric cell research. In one building a bellicose army major is shouting preparedness, while in another a noted international jurist is preaching peace at any price.

A day's visit there is a Jules Verne trip around the world.

Like London (in this one respect only) Champaign-Urbana is spread out over a great deal of territory. As a result, many stretches of well-kept grass and well-groomed trees appear in every section of the twin towns.

A world-travelled Yale graduate of our acquaintance says that two of the four most beautiful vistas in the world exist there within hailing distance of each other.

One is the expanse of Gothic-arched trees, golf-green grass, and gracefully curving concrete paths which separate the university Law Building from Green Street.

The other is the block-long sweep of terrain which extends north, bounded by stately sentinel-rows of trees, from the domed auditorium.

Particularly in southeastern Urbana are numbers of adroitly executed small homes.

This section is an architectural feast, just as the fraternity disavilla, Etruscan, Renaissance byzantine, Elizabethan country house, Southern colonial, picaresque, late Hollywood, and early American railway station types—is an architectural stomachache.

It's an enlightening, exasperating, eviscerating, edifying, expatriating, embroiling, experimenting, enchanting pair of country towns.

A PAGE FOR HOME SERVICE WOMEN

TIPS ON PREPARING, KEEPING MEAT CUTS

By Dorothy deBerard

CONTRARY to belief most men do the meat purchasing for the family's daily meals. Whoever does your meat purchasing probably economizes by taking advantage of the daily or weekly "specials" of the butcher.

What happens to the meat when it reaches home? We hope it isn't allowed to remain in its many wrappings of paper and squeezed in the refrigerator wherever the package may fit.

Paper acts as an insulator and meat allowed to remain wrapped in it invites spoilage bacteria more readily. Therefore, as soon as the meat comes from the market, remove the paper and put it on a clean dish.

As for the place of the meat in your refrigerator. Uncooked meats are, of course, the most perishable, and should be placed in the coldest area of the refrigerator. This you will generally find to be on the bottom shelf on the side of the freezing unit.

Cooked meats dry out very readily so they should be kept in covered containers. Glass or old-fashioned crockery ware are best. Place these containers in the next coldest area of the refrigerator.

Additional prevention of spoilage in the meat may be obtained by forming a coat over the meat. This inhibits bacterial growth. One method of coating is to sear the meat, allow it to cool, and place it in the refrigerator. The cooking may be completed when the meat is to be used.

Many meat recipes now call for the use of a marinade. This is composed of a mixture of oil and vinegar or lemon juice. One that can be used very nicely is made of three parts oil and one part vinegar, salt and pepper. This also coats the meat and the dressing adds to the flavor and tenderness of the meat when cooked.

Have you tried a roast shoulder of lamb allowed to stand in a marinade? Here is one in which the marinade contributes to the goodness of the meat dish.

Roast Shoulder of Lamb

Select a shoulder of lamb weighing from 3 to 4 pounds. Allow to marinate until ready to use. Remove and wipe off excess marinade. Rub salt, pepper, and flour over the outside. Place the roast on a rack in an open pan without water. Sear for 30 minutes in a hot oven (480°F.). Reduce the temperature of the oven to 300°F. and cook the meat at this temperature until tender. About 2½ hours will be required.

About one-half hour before the roast is done, canned pears or peaches with grated cheese sprinkled on them may be added to the roasting pan to brown. Serve the roast hot, with this fruit accompaniment and brown gravy.

DESSERT RECIPE

Honey Nut Custard

1 cup cream or evaporated milk
½ teaspoon salt
1 cup boiling water
½ cup honey
1 whole egg
1 egg yolk
1 egg white
½ cup chopped nuts.

Combine cream, whole egg, egg yolk and salt. Blend thoroughly. Combine egg white. Fold in the first mixture honey and boiling water and bring to boil. Pour hot syrup over stiffly beaten and the nuts and freeze.

How to Serve and Refrigerate Fruits

By Mrs. Phyllis K. Dunning

DIETS may come and diets may go, but whether we are struggling to reduce or fighting to fill out unattractive hollows, there is one food which practically all of us include in our menus, and that is fruit.

At this time of the year especially, when the urge to eat fresh green growing things is upon us, it is a wise homemaker who keeps her refrigerator well stocked with fruits.

They will not only satisfy spring-time appetites in the best of all possible ways, but they will also help her in her menu planning, for fruits can be so easily varied that they can always be depended upon to furnish a bright spot in what might otherwise be an uninteresting meal.

Most fruits can be eaten either raw or cooked. They add flavor to dishes which are too bland or too familiar to be satisfactory of themselves. They make attractive garnishes.

Fruit for Every Meal

Fruit can take a responsible position in any meal of the day. At breakfast it may be served ready to eat, or you may prefer to arrange a bowl of various fruits, and place it on the table so that each breakfaster may select what he wishes.

For breakfast, the fruit may be served separately or in combination with a cooked or dry cereal. Vary the fruits by serving them cooked as well as raw.

Pears, peaches and apples are particularly good when baked or stewed. Apples, for instance, may be baked with white or brown or maple sugar or with honey.

They may be flaxseed with cinnamon, cloves or lemon. They may be served plain, with cream or with cereal. Apple sauce is delicious with French toast. And apples stewed in a sugar syrup are grand with hot muffins.

For luncheon and dinner, fruits can be served in fruit cups, salads, puddings, pies, tarts, turnovers, short cakes, ice creams and fritters. A cold fruit soup is a new culinary wrinkle.

How to Store Fruits

The first thing to remember about

CINCINNATI SHOW

CINCINNATI, Ohio—An electric refrigerator show was held recently in the auditorium of *The Cincinnati Inquirer*.

Displayed at this show were Copeland, Electrolux, Frigidaire, General Electric, Kelvinator, Leonard, Majestic, Mayflower, Mohawk, Norge, Servel, Wayne, Westinghouse, and Zerozone refrigerators.

The following firms had booths at the show: Griffiths-Victor Distributing Co., Auto-Rad Supply Co., Majestic Distributing Co., Milnor Electric Co., Anour Co., Chubb-Steinberg Co., Frigidaire Sales Co., Tafel-Williams Co., Southern Ohio Radio Corp., Broering Co., Sutcliffe Co. of Ohio, Fink Electric Co., Williamson Heater Co., A. and N. Music Co., Miller Range Co., Bellonby Furniture Co., Baldwin Piano Co., Alms & Doepke Co., McAlpin Store, Burck-Bauer, Inc., Marietta Cnair Co. and Rollman's.

FROZEN CONFECTION

SIOUX CITY, Iowa—The Icy Fruit Roll Sales Co. has been organized and incorporated with \$100,000 capital to manufacture a new frozen fruit confection. The incorporators are: Carl E. Anderson of St. Louis; L. W. Mallory, Sioux City, wholesale grocer, and J. A. Mallory, his son.

storing fruits in the electric refrigerator is that they should be kept in the warmest shelf, first, because they are less perishable than other things which are stored in the refrigerator, and, second, because fruits frequently have very decided flavors and odors, and it is consequently desirable to have the air as it circulates through the cabinet pass from the fruit directly onto the cooling coils, which will rob it of both flavor and odor along with its heat.

In refrigerators having the cooling unit at one side of the cabinet, the warmest place is on the shelf at the top of the cabinet directly opposite the unit.

You will see that this is true when you remember that it is the circulating air in your cabinet which chills your foods, and that this circulation is the result of the heavy cold air rolling off the unit and falling down to the bottom of the cabinet, where it rolls along the floor of the cabinet across to the opposite wall, whence it rises to the top of the cabinet and again comes into contact with the cooling coil.

The top shelf, to one side of the cooling coil, is then the place to keep your fruits (and, incidentally, your uncooked vegetables).

Berries, being somewhat more perishable than fruits, may be placed on a somewhat colder shelf.

Because the air inside an electric refrigerator is necessarily dry (moist air fosters the growth of bacteria and hastens spoilage) certain fruits will show a tendency to dry out unless they are protected.

For this reason fruits which come wrapped in paper should be left in the wrappings until they are used.

This applies particularly to grapefruit, oranges, melons, apples and lemons, so if these fruits do not come to you wrapped, wrap them in parchment or waxed paper if they are to be stored for any length of time. They may be placed directly on the shelves or in shallow baskets.

If any of the above fruits are cut and not entirely used, the unused portion may be covered with parchment, or waxed paper, or they may be placed cut-side down, on a saucer to preserve their moisture.

Berries should be examined for spoilage upon arrival from the market, then spread on a wire rack or in a pan lined with crushed soft paper and placed in the refrigerator. Do not wash the berries until ready to serve them.

Do not pack your fruits too closely together, for this will prevent the proper circulation of the cold air over them and may result in their spoiling. Do not store them in flat-sided containers placed tight against each other, as this will also cut off the circulation.

In their desire to make the refrigerator look particularly attractive and neat, women have been known to line the wire shelves, especially the shelves containing fruits or vegetables, with oil cloth or paper. This must never be done, as it prevents circulation of the air, and without this circulation there can be no proper refrigeration. The racks are purposely made so that the air can pass freely through them.

LOUDEN TO DIRECT HOME SERVICE WORK

CHICAGO—An arrangement has been closed by the Grigsby-Grunow Co. of this city with Mrs. Dorothy Ayers Loudon whereby she identifies herself with the company as home economist, according to Duana Wanaker, vice president in charge of advertising.

She will direct the preparation of recipes and write on refrigeration for the Grigsby-Grunow publication "Voice of Majestic."

Mrs. Loudon operates principally in directing cooking schools for some of the largest newspapers in the country. In all of her cooking school classes, she will use a Majestic refrigerator exclusively and will advise and co-operate with Majestic distributors and dealers.

She is a graduate hospital dietitian, holds a B. S. degree with the University of Wisconsin, is a member of the American Home Economics Association and is director of The Homecrafters.

Majestic has announced that a 40-page recipe book has just made its appearance in dealers' hands. It is bound in a heavy, varnished, red and green cover.

HIGH SCHOOL STUDENTS HEAR TALKS ON REFRIGERATION

ST. LOUIS—Fifty high school students enrolled in home economics courses at the East St. Louis, Ill., high schools crossed the Mississippi on May 14 to receive instructions in the value of electric refrigeration at the Kelvinator Sales Corp.

When you buy

a Kelvinator Ice Cream Cabinet...

you get a lustrous MONEL METAL top

BECAUSE "Nickel Alloys Look Better Longer" ... because Monel Metal offers greater beauty, cleanability and wear-resistance than any other available material, this high Nickel alloy is being used by Kelvinator for all its ice cream cabinet tops.

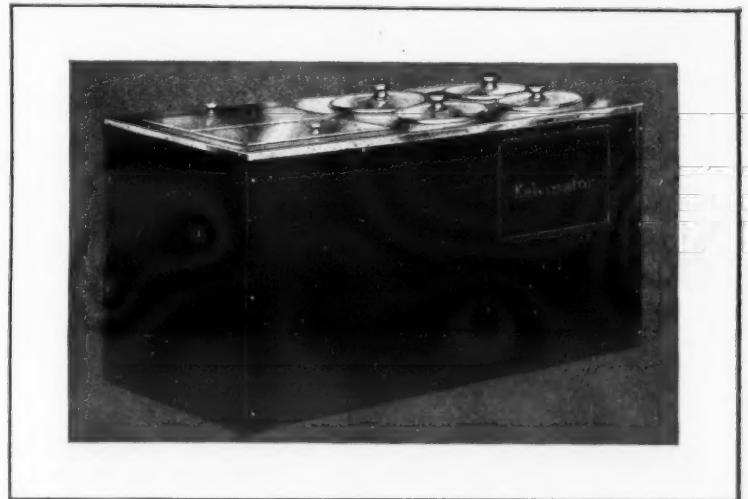
Buyers are demanding Monel Metal cabinet tops today because Monel Metal insures lasting attractiveness where wear is hardest. Its silvery beauty is permanent ... for Monel Metal is strong as steel and solid clear through, with no coating to chip, crack or wear off. It can be kept bright and spotless with minimum cleaning effort ... for Monel Metal is rust-proof and highly resistant to corrosion, with a surface as smooth as glass.

Whether you use or manufacture ice cream cabinets, it will pay you to specify easy-to-clean, long-wearing Monel Metal.

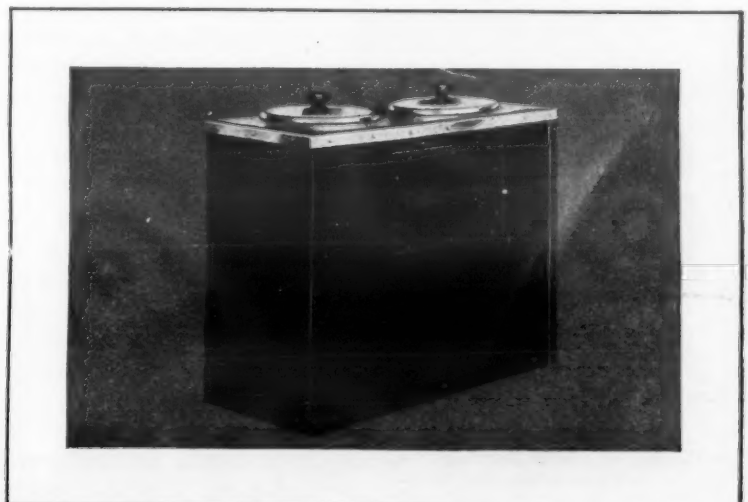
THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York, N. Y.

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

A HIGH NICKEL ALLOY
MONEL METAL
NICKEL ALLOYS LOOK BETTER LONGER

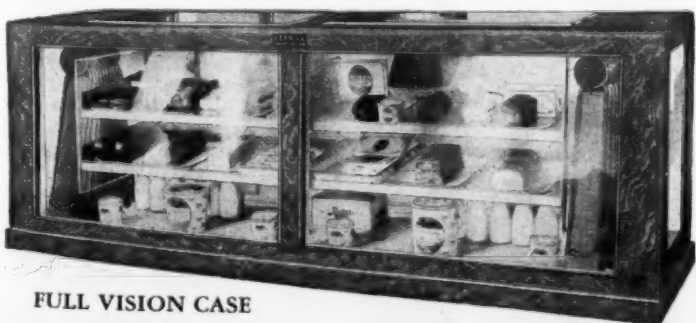


This Kelvinator 4-hole combination ice cream cabinet has satin finish Monel Metal top and lids. Manufactured by Kelvinator Sales Corp., Detroit, Mich.



Kelvinator 2-hole single row remote ice cream cabinet. Monel Metal top and lids standard equipment

Makes Sales—
for user and **YOU**



FULL VISION CASE

HERRICK
HERRICK REFRIGERATOR COMPANY
1006 RIVER ST., WATERLOO,

You are cordially invited to visit The International Nickel Company Exhibit at the N. E. L. A. Convention, Municipal Auditorium, Atlantic City, N. J., June 8th to 12th. Booths 373, 375 and 377.



SANDERS BELIEVES ONE PLATE ENOUGH

DETROIT—Three large meat markets in this city have been recently equipped with a total of 80 ft. of Chilly Boy display cases manufactured in Detroit by the Sanders Butcher Supply Co.

Ben Krause, who operates a market at 4349 Grand River Ave., has equipped his shop with 40 ft. of display counter and a 12x12 ft. Sanders cooler. C. J. Harris and Jerry Hegl, with stores at 8509 Linwood Ave. and 4411 Tireman Ave., respectively, have installed 20 ft. of refrigerated case. All three of the markets use electric refrigeration for cooling the equipment.

"Practically all of our installations of equipment," states E. E. Sanders, owner of the company, "are in stores using mechanical refrigeration."

Since 1928, Sanders has been building Chilly Boy cases with one layer of plate glass across the front. The change from three to a single plate of glass, he declared, was the result of a visit to a shop which was encountering some difficulty in selling its meats.

"While attempting to make a collection," Mr. Sanders said, "one of my customers remarked that he had bought the case to sell meat, but not to keep it."

"The case had sweat between the glass, so that the three panes made the meats look a bit off color with the result that the stock in the cooler sold faster."

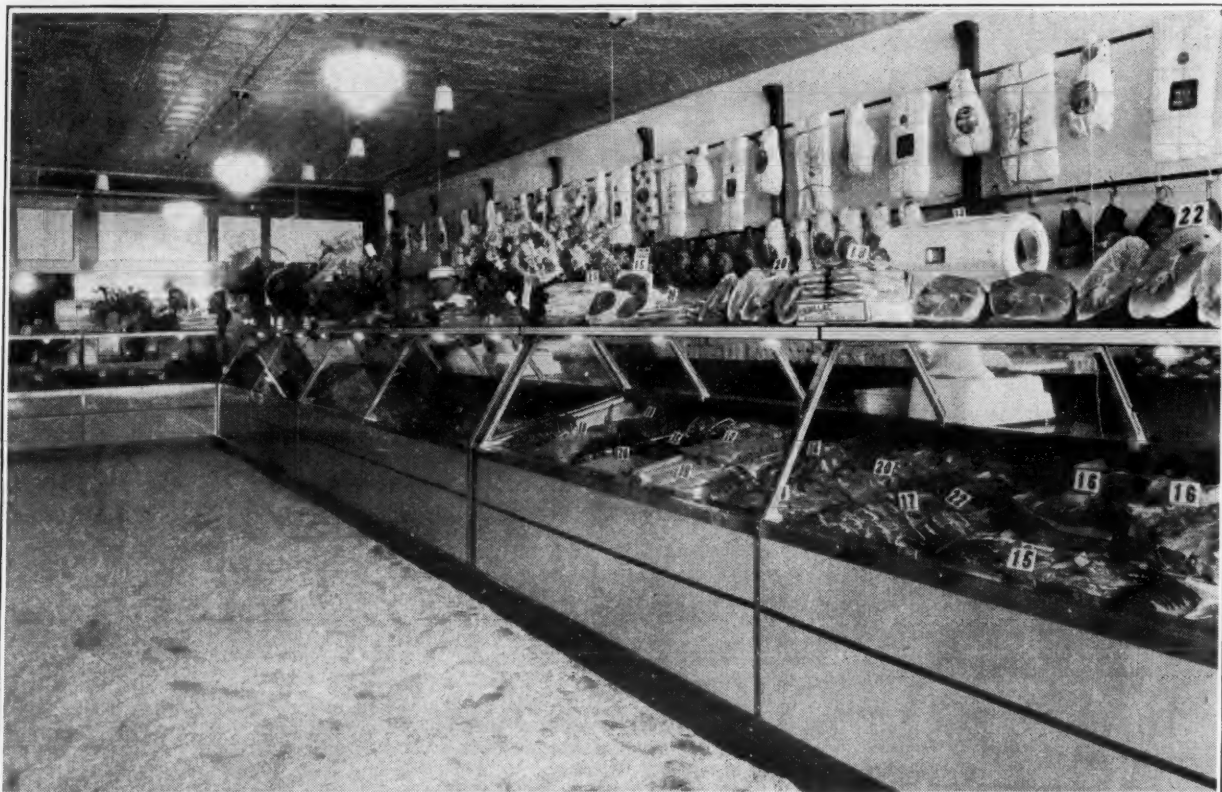
"We removed the second and third panes of glass and installed an entirely new baffle system. This change did not affect the temperatures within the case and the merchant found that he was able to sell the meat out of the case instead of the cooler."

Two models make up the Chilly Boy line of cases, one a double duty model with storage compartment in the base,

and the other a top display counter. Both models are available in four lengths from 8 ft up.

The double duty model has storage drawers in the base and doors leading to the display set on rollers. Display

Ben Krause Has Faith In Display



Ben Krause, who operates a market in Detroit, has equipped his shop with 40 ft. of display cases. Electric refrigeration is used to cool the equipment.

McCray Engineer Tests Thicknesses

By G. J. Hopkins
Chief Engineer

McCray Refrigerator Sales Corp.

THIS question, "How many thicknesses of glass should a display case refrigerator have?" reminds me of the story of Abraham Lincoln. It is said that someone asked him the question, "How long should a man's legs be?" To which he replied, "Long enough to reach the ground."

The matter of the choice of the number of glasses in any refrigerator display is not simply a matter of saying, "Let's put in a lot of glass." The display case refrigerator serves two purposes. First, its purpose is to display and sell the merchandise. Second, it must keep it in good salable condition during the period in which it is displayed.

Every style of display case is therefore a separate problem, according to the service required of it. From a sales standpoint, the best display, if flies, heat and dirt could be kept away, would be not to have anything between the customer's eye and the stock. The nearer we can approach this condition and maintain sanitary arrangements, the more profitable it is for the merchant.

Now the taller the case and the higher up the refrigeration comes in any case, the more heat leakage is going to enter into the economy of operating. As you know, for low temperature, like frozen meats and that sort of thing, we sometimes have to use as many as four glasses or perhaps I should say three dead air spaces.

But we do it reluctantly and only because we are forced to. Every thickness of glass decreases the display value or visibility nearly 10 per cent or even more under certain circumstances—and, remember, that the primary object of a case is to display foods.

Now take the matter of our top cases. It would be just as unnecessary to put three or four thicknesses of glass in our top counters as it would be to put dual wheels and tires on the rear of a pleasure car. Truly, there is a real need for a dual wheel on the rear of a truck, but certainly not on a pleasure car.

We set up in our laboratory two counters, one with two thicknesses, the other with three thicknesses of glass. These were put under actual operation for a number of weeks, equipped with identical refrigerating outfits. For the purpose of making sure that the test was fair, we had an engineer from the factory who built the mechanical unit operate the outfit. Very much to our surprise, we discovered there was more variance in the performance of the two mechanical units than there was in the heat leak of the cases.

The test showed that the actual difference in internal case temperatures between the cases with two thicknesses and three thicknesses of glass was less than one degree. In other words, the test showed that the case with two thicknesses of glass and wide air space between was fully as effective as the case with three thicknesses of glass with narrower space between.

The upper part of the case in the top counter line really is like a cover. Its purpose being to keep the draft from stirring up the cold air in the bottom of the case. The actual top of the case could be single glass as far as the heat leak is concerned, because the cold stays down in the case and you reach through the top as you do in a chest, but in cases where the refrigeration comes higher on the glass, the condition changes, making heat leakage a more important factor.

FEDERAL COMMISSION TO HEAR PACKERS' CASE

WASHINGTON, D. C.—Charges of unfair competition on the part of Armour & Co. and Swift & Co. will come up for final argument before the Federal Trade Commission here June 11.

The commission said the principal stockholders of Armour & Co. held the majority of common stock of the Waugh Equipment Co. of Depew, N. Y., manufacturers of railroad equipment.

The claim was made that railroads were urged to buy equipment from the Waugh Co. on the promise of increased freight from Armour & Co., or the threat of withdrawal of business if the purchases were not made.

Similar complaints were made in the case of the Mechanical Manufacturing Co. of Chicago, with relation to Swift & Co.

Both concerns involved denied the charges and the Mechanical Manufacturing Co. said it had discontinued its railroad equipment business before the filing of the complaint.

OUR ERROR

In the May 20 Refrigerated Food Section, mention was made of the fish-freezing operations being carried on in Gloucester, Mass., by the General Foods Corp. The General Seafoods Corp., and not the Atlantic Coast Fisheries Co., as was reported in the News, is the name of the General Foods subsidiary which is doing the quick-freezing in Gloucester.

THIS CABINET
IS INSULATED WITH
INSULITE
the Wood-Fiber Insulating Board
SANITARY-ODORLESS-DURABLE
AND HIGHLY EFFICIENT INSULATION



THE INSULITE CO. ENGINEERING DEPARTMENT



THE CHEMICAL LABORATORY



THE GENERAL LABORATORY

Pictured above are views of The Engineering Department and Laboratories of The Insulite Co. They are maintained to be of service to you. A corps of insulation experts will gladly assist you with your insulation problems. There is no charge for this service, or obligation on your part.



THE INSULITE CO.
1200 Builders Exchange, Dept. 30F
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OFFICES IN ALL PRINCIPAL CITIES

INSULITE
the Wood-Fiber Insulating Board

This
SEAL OF
ENDURING
INSULATION
HELPS CLOSE THE SALE

ONCE your refrigerator cabinet is completed, it is difficult to prove that durable and efficient insulation has been used in its construction. That's the reason for the attractive silver and blue metal seal which is affixed to cabinets insulated with Insulite. This Seal is your visible evidence that a superior insulation has been built into that cabinet.

Furthermore, this Insulite Seal helps to promote the sale of your cabinet. For years, through advertising, millions of magazine readers have been told constantly of the advantages of Insulite insulating efficiency . . . that it is odorless and will not attract odors . . . that it is made from the strong, tough fibers of northern woods, chemically treated to resist moisture . . . and is not subject to rot, mold, or disintegration.

Although structurally strong, Insulite is light in weight and when once installed in a cabinet the rigid slabs stay where they are put—they will not sag or settle throughout the entire life of the cabinet. Furnished cut to your specifications, Insulite eliminates waste, reduces labor costs, and speeds up production. If you are not already using Insulite in your cabinets, may we send you samples and additional information. Let us send you also a sample of the Insulite Seal which is furnished without cost to all cabinet manufacturers using Insulite insulation.

space in all of these models is 30 in. deep. In the top counter models the space for display is 33 in. deep.

All of the models have 2½ inches of insulation in the front, tops and ends and 4 in. of insulation in the base. Exteriors of the case are porcelain, finished in green and white with a black stripe at the base. Outside electric lights are concealed by the top porcelain panel.

The deep slant of the base of the display compartment, coupled with baffling, Sanders claims, causes the front of the case to be colder than the rear.

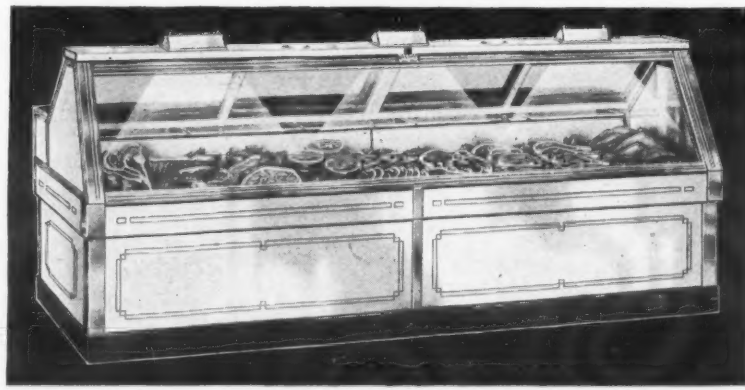
Headquarters of the company are located at 2601 Michigan Ave., with the factory at Sixth and W. Fort Sts. Distribution which was formerly limited to Detroit has been expanded to Ohio, Michigan and Wisconsin.

The H. A. Redmond Co., Cleveland; A. Herz & Son, Milwaukee; Toledo Edison Co., Toledo; Blade Refrigerator Co., Sandusky, Ohio; C. E. DeRam, Fremont, Ohio, and B. M. Ellingson, Oshkosh, Wis., are operating as dealers for the company.

FRUIT GROWERS TO ERECT NEW STORAGE PLANT

WATSONVILLE, Calif.—Fruit Growers Cold Storage Co. announces that the contract for a \$180,000 one-story reinforced concrete cold storage plant with a capacity of 280,000 boxes of apples has been awarded to P. T. Wallstrum. Construction was started the latter part of May.

6 Points of . . .
Superiority in this
NEW McCRAY



The McCray Model No. 107. Available in 6, 8, 10, 12 ft. lengths.

NEW IDEAS, built into this refrigerator display case with the skill developed in McCray's 41 years' experience, give you these important advantages:

- (1) better display;
- (2) finer appearance;
- (3) improved arrangement;
- (4) perfect illumination;
- (5) easier to work from;
- (6) lower operating cost.

Dealers in electric refrigeration should send the coupon now for further information about this and other McCray models.

ALL McCRAY MODELS
MAY BE USED WITH
MECHANICAL
REFRIGERATION OF
ANY TYPE

McCRAY
REFRIGERATORS

McCRAY REFRIGERATOR SALES CORPORATION
Dept. 66, McCray Court, Kendallville, Indiana

Without obligation please tell me more about ☐ refrigerator display cases; ☐ storage refrigerators; ☐ coolers.

Name _____

Street _____

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ENGLISH ASSOCIATION HEARS SON OF 'Z'

MANCHESTER, Eng. — "Marketing perishable foods: today and tomorrow" was the topic of a talk given by W. Zarotschenzeff, son of the inventor of the "Z" method of quick-freezing, M. T. Zarotschenzeff, at the Northern Market Authorities Association's annual meeting held here recently.

He explained that the problem of food preservation is the prevention of bacterial action. He then discussed preservation methods of refrigeration in the meat, fish and fruit industry.

Answering the question, "Have marketing methods of today reached perfection," he pointed out what he considered to be inherent faults in meat, fish and fruit industries.

In considering the "roads to improvement," he declared that the consumer wants: (1) First and best quality, (2) to have foods available at all seasons, and (3) foods in convenient forms, shape, etc.

He concluded with an explanation of quick-freezing methods of quick-frozen products, and with a picture of "tomorrow's marketing methods," in which fish and meat stores will offer carton foods.

The Northern Market Authorities Association comprises 70 local authorities in the six northern counties of England (and also in Scotland) controlling public markets, abattoirs and cold stores. The meeting was attended by representatives from 54 of such authorities.

One of the objects of the association, according to A. Chadwick, secretary, is to promote and encourage improved methods of transport, handling and distribution of foodstuffs.

NEW TRENDS REPORTED IN ICE CREAM INDUSTRY

GREENVILLE, Mich. — New developments in ice cream merchandising are reported by H. J. Burman, representative of the Consolidated Soda Fountain Corp. of this city, manufacturers of Copeland-Consolidated ice cream cabinets, who recently returned from a swing around the circle.

Mr. Burman visited ice cream manufacturers in Chicago, St. Louis, Kansas City, Omaha, Minneapolis, St. Paul, Cleveland, New York, New Haven and Boston.

"All manufacturers," he said, "are introducing new lines of packaged products and novelties in ice cream, and this is increasing their volume. These novelties take many forms and come in a variety of colors and color combinations. For example, ice cream is being put up in small imitations of the different characters of popular cartoons.

"Another factor in the increase of business of ice cream dealers," Mr. Burman stated, "is that manufacturers and dealers are beginning to display their ice cream. For this purpose display cabinets with plate glass tops and sides are used.

"Large chain groceries as well as leading independents are also looking very favorably on the display of ice cream along with their other merchandise."

Mr. Burman's trip was made in connection with the new Copeland-Consolidated ice cream cabinets and display cabinets. He took with him a "knock-down" model of these ice cream cabinets.

Speaking of ice cream cabinets for use in connection with frozen foods, Burman said, "The ice cream cabinet is really the forerunner of frozen food cabinets. I found a great many dealers using ice cream cabinets for frozen foods as well as ice cream. I have found frozen chicken and chops and ice cream all in the same cabinet, and the frozen foods were kept perfectly."

EASTERN HOSPITAL CHANGES COOLING SYSTEM

PROVIDENCE, R. I. — Buckley & Scott, Inc., Kelvinator distributor, has completed a large job in the Providence Lying-In Hospital, where a 40 hp. machine was replaced with various model Kelvinators. Included in the order were: seven X-5-70; five X-5-80; one X-5-90; four X-5-100; two, X-5-10; two ice cream cabinets; one 400-lb. ice machine; five WR-40 condensing units; two WF-40 condensing units; one WT-41 condensing unit, and one water cooler.

These units supply refrigeration for all floors, including the formula room, the laboratory, the garbage storage room, the diet kitchen, the main kitchen, the serving kitchen and the bakery. The entrance to the refrigerator rooms is cooled as well as the storage and working spaces.

KROGER PUTS ROSE OVER INDIANAPOLIS AREA

INDIANAPOLIS — Arthur M. Rose has been recently put in charge of the Kroger Grocery & Baking Co. in this area. He is also district manager for Kroger at Peoria, Ill.

LETTERS FROM READERS

Opportunity for Dairies

Atlanta, Ga.

Editor:

The rapid turnover and the chances for business expansion in the handling of perishable food products, preserved by the quick-freeze method, has most attractive possibilities. Certain inherent difficulties concerned with the distribution of these foods, however, tend to create for their distributors a monopoly.

This arises because of the necessity of prompt delivery or adequate refrigeration while such products are being delivered to the consumer. In consequence, it is not feasible for most food distributors to handle frozen products economically.

On the other hand, large dairy companies who, heretofore, have largely limited their sales to milk and cream, appear now to have a remarkable opportunity to take over a large part of a new industry, and with only a slight increase in cost or overhead expense.

The same wagon or truck which

makes frequent deliveries of milk can also deliver frozen foods. The start has been made already in the delivery of orange juice by milk men. This will, in all probability, prove satisfactory to the consumer and profitable to the dairy companies.

It takes only a short flight of the imagination to visualize the same companies arranging to vary the orange juice with frozen strawberries, raspberries, peaches, etc. And still only a little more vision to see the feasibility of distributing frozen sea food, vegetables, packaged meat, and poultry. All of these products can be kept along with the milk supply in cold storage.

Shipments in refrigerator cars from various freezing plants can easily be arranged and without loss from spoilage or over supply. Furthermore, overproduction can be taken care of by the preservation afforded by freezing.

The producer will profit by a stabilized market, while the consumer will receive a product of high quality, in all seasons, and at reasonable prices.

The milkman can leave a circular giving a price list of available frozen

products, and orders can be taken for alternating or changing these foods, as desired.

The grocer has now, and will have for a long time to come, inadequate refrigeration. Drug stores have better refrigeration, but the consumer does not think of buying food supplies from them.

A logical survey of the situation seems to leave the field open to the dairy companies, who, if not now, will eventually utilize their facilities in the development of this natural monopoly of distribution with all of the advantages which arise from a quick turnover of one of life's fundamental necessities.

C. M. FOSTER,
President, Polar Products, Inc.

YORK GETS CONTRACT

San Francisco — York Ice Machine Co., 239 Ninth St., San Francisco, is to install the refrigeration system for the new barracks to be constructed at the Mare Island Navy Yard, at Mare Island, Calif.

BRIDGEPORT STORES BUY NEW EQUIPMENT

BRIDGEPORT, Conn. — Volume of commercial installations reported for the last few weeks by the Downes Smith Co., Frigidaire dealer, shows an increase, according to A. F. Becker, manager.

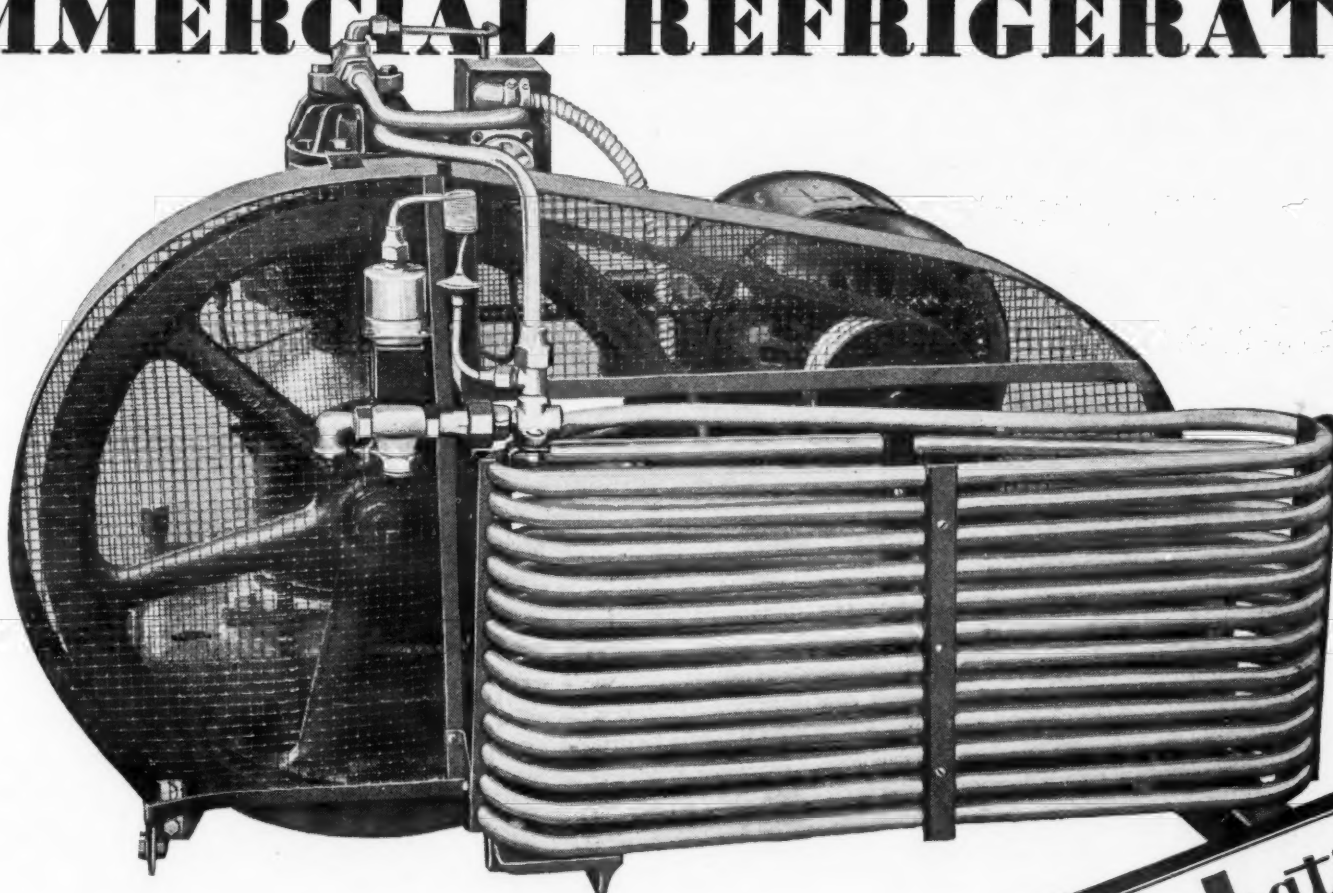
Two delicatessen stores have been equipped with compressors and coils to refrigerate showcases. S. Grossman's Park Ave. store will have an A-233E compressor with a 224S coil, while that of the E. F. Windt Co., Wood Ave., is equipped with an A-375 compressor and 26F and 78F coils. A 78F coil to cool an additional showcase, hooked up to a 1 hp. compressor, has been provided for the Black Rock Market.

Compressors and coils have been ordered for the new building of the Algonquin Club, Golden Hill St. Two W-5100 compressors will cool a 12x12.6x11 ft. walk-in cooler which is divided into five compartments.

A W-5100 compressor with two 96F coils has been installed in Rudek's Market, Seaview Ave., while Anton Polchow-ski of the same street, has an A-5150 compressor and two 96F's.

SERVEL

COMMERCIAL REFRIGERATION



16 new models, so powerful, so flexible, that they meet every commercial demand with their low-cost, efficient refrigeration

SERVEL'S new improved machine units combine tremendous power, scientific efficiency, rugged strength.

They meet the most rigid demands for dependable commercial refrigeration; set a new standard of performance for years to come.

Servel's exclusive advancements make these 1931 models easier to sell, simpler to install, more economical to operate.

For every capacity requirement, for every type of service, Servel brings you a rugged,

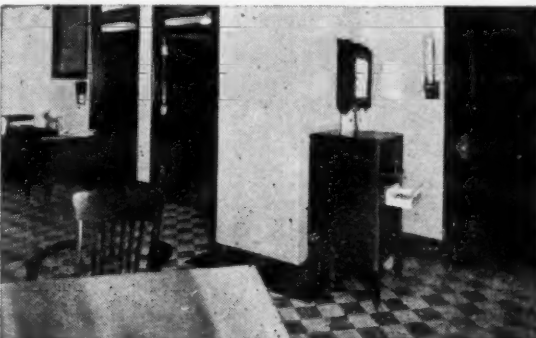
efficient unit that will exactly meet your customers' demands.

Here's an attractive proposition that will insure more profitable business for you. Send the coupon today for complete details of the new Dealer Plan.

■ NEW-STYLE CONDENSERS: interchangeable; highly efficient. . . .
■ MULTIPLE VEE-BELT DRIVES: insuring uninterrupted service and quiet operation. . . .
■ SIMPLIFIED CONTROLS: positive action; fully automatic. . . .
■ ECONOMICAL OPERATION: low-speed compressors; greater refrigeration for current used. . . .
■ RUGGED PRECISION CONSTRUCTION: built for long use; compact and accurate. . . .
■ WIDE RANGE OF 16 MODELS: with capacities of 130 to 1510 lbs. ice equivalent per day.

■ Throughout this modern equipped department store in Milwaukee, Wis., Servel is protecting food displays, chilling drinking water, cooling soda fountains, etc.

■ On the busy "floor" and in the handsome executive offices of this New York security exchange, Servel Water Coolers are delivering quiet, dependable service.



Refrigeration PLUS!

■ Servel Commercial Equipment safeguards the meats and foods of many progressive merchants who have leased space in the modern Central Market, Columbus, Ohio.



SERVEL SALES, INC., Dept. H-3,
Evansville, Indiana.

Gentlemen: Please send me complete information about SERVEL Refrigeration PLUS.

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CITY _____ STATE _____

PROGRESS IN LOW TEMPERATURE FIELD

BIRDSEYE OYSTERS SELL WELL IN EAST

By Clarence Birdseye
General Seafoods Corp.

EXPERIMENTS by the laboratory of the General Seafoods Corp., have resulted in the development of a method for quick-freezing shucked oysters so that the product has met with favor.

During the oyster season of 1929-1930 individual cartons of oysters were prepared at the Gloucester plant to be sold as part of the line of Birdseye Frosted Products sold from mechanically refrigerated cabinets in the commercial tests being carried on in Springfield.

This year a considerably larger quantity of cartoned oysters has been quick-frozen for sale throughout New England as a part of the varied line of quick-frozen foods distributed by the Birdseye Packing Co.

The shucked oysters are supplied by the Bluepoints Co. Inc., producers of oysters in the United States. They are of the finest selected stock and run about 215 to the gallon.

Shipments to Gloucester are made in 5-gallon cans, packed in ice. There the oysters are thoroughly drained and packed in 12 ounce moisture-proof cellophane lined waxed paperboard cartons, which in turn are wrapped and heat-sealed in waxed glassine paper. These packages each contain about 20 oysters.

Immediately after being wrapped the cartons are passed through the Birdseye quick-freezing machine, in which they are frozen in sixty minutes. They are then packed in insulated corrugated fiberboard shipping containers and held in cold storage until shipped to the retail stores.

The frosted oysters are not merchandised as a separate product, but rather are considered merely as one of the units in the "family" of Birdseye products. This policy makes the delicious shellfish available to a large number of stores with low-temperature facilities, which could not be profitably employed for any one quick-frozen product.

A very interesting fact developed by the Springfield tests is that cartoned oysters sell readily even in the hot summer months.

Although the commercial distribution of Birdseye oysters has so far been confined to the New England territory,

Many Machines Used in Quick-Freezing Peaches

By Ralph V. Grayson

ONE of the problems faced in the freezing of peaches is the selection of the crop, so that the pack will be uniform in appearance and quality. It is common that when half of the peach is soft ripe, the other half may be firm and green and the presence of a semi-ripe fruit affects the quality of the pack.

Selection of peaches for the Polar Products, Inc., Monticello, Ga., plant, is handled by an individual who is familiar with all the varieties of peaches grown in the Monticello section. The orchards are inspected weekly to determine the ripeness of the fruit.

In most instances it is found necessary to have pre-cooling rooms where the fruit can be held at a requisite temperature and thus thoroughly ripening, prior to the processing and freezing.

The peaches are brought into the plant in field baskets or from the pre-cooling room, as the case may be. Here the peeling operation is carried out in a continuous draper type machine which contains the alkali bath, which consists of approximately 10 per cent caustic soda in water of a temperature of approximately 35° F.

The peaches are allowed to remain in this bath for approximately three and one-half minutes, after which they are passed to a restricted shaker washer of special design. This machine rolls the peaches as a spray of fresh water under pressure is delivered through a series of small jets which remove the peeling completely and leave the product clean, but slightly gelatinous on surface.

This method of peeling was adopted after a number of tests had been run which showed that a peach peeled at an extremely high temperature with a smaller percentage of alkali is slightly cooked and readily shows darkening of the pigment surface. This, of course, is immaterial where peaches are to be

occasional shipments have been made successfully to the central and western states, to England, Germany, Argentine and Australia. Under proper conditions no deterioration takes place during even prolonged storage.

The Birdseye methods have been found successful in the distribution of clams, scallops, crabmeat, and other shellfish.

canned and heat treated as means of preservation.

In the matter of freezing peaches, it is very important that the product be kept fresh and in no way cooked or blanched. After leaving the washer the peaches are passed through an isolation bath on a draper which contains water at approximately 50° F., and a chemical which neutralizes the alkali and insures a clean, smooth peach.

The peaches are then passed on white rubber belt conveyors to the processing table where they are carefully inspected, under-ripes and over-ripes are thrown out, as well as those generally unfit for freezing.

At the processing table the peaches are halved and pits removed; the pits being discharged through convenient conveyors to a point outside of the packing house. The halves of peaches are placed on a center conveyor which carries them to the slicing machine, of special type, which slices the peaches and fills them into waxed paper containers in the same operation.

From the slicing machine the containers are moved on a continuous conveyor to an automatic weighing machine, after which they receive the necessary amount of syrup. They are then capped and sealed and ready to be placed in the low temperature freezing machine.

The sealed packages of peaches are moved by conveyors into the cold storage room where they are carefully packed in baskets and placed in the low temperature Grayson-Foster quick-freezing machine, which consists of a series

of tunnels 28 ft. in length, through which is passed a current of cold air at a very high velocity and at a temperature of from 35 to 45° F. below zero.

Peaches when introduced into the freezing machine are approximately 85° F., and are quickly frozen in a solid mass, in one pound containers, in approximately one hour and fifteen minutes.

Larger containers require a greater length of time and smaller containers proportionately less. However, the freezing of the product to 0° F. at the center of the containers is all important and for this reason the product is allowed to remain in the low temperature freezing machine for sufficient time to insure a reasonable factor of safety in freezing.

As the product comes from the freezing machine it is placed in corrugated paper cartons, 36 pounds to the carton and carefully sealed, using silicate of soda and gummed tape.

From the cold storage room, which is adjacent to the railroad, the product is loaded through a canvass tunnel to the standard refrigerator car which is pre-cooled for 72 hours down to a temperature of 8° F. above zero.

By means of a canvass tunnel the loss of refrigeration is minimized and the cars which contain approximately 685 cases are loaded in approximately one hour. It is vitally important that the loading of the cars be done under favorable conditions and as quickly as possible, owing to the fact that loss of refrigeration through carelessly opening and closing of car doors seriously af-

fects the shipment in transit, inasmuch as the temperature is raised and several hours are required to bring it down to the requisite degree for safe transit.

The cars are iced with crushed ice and 20 per cent salt at all regular icing stations.

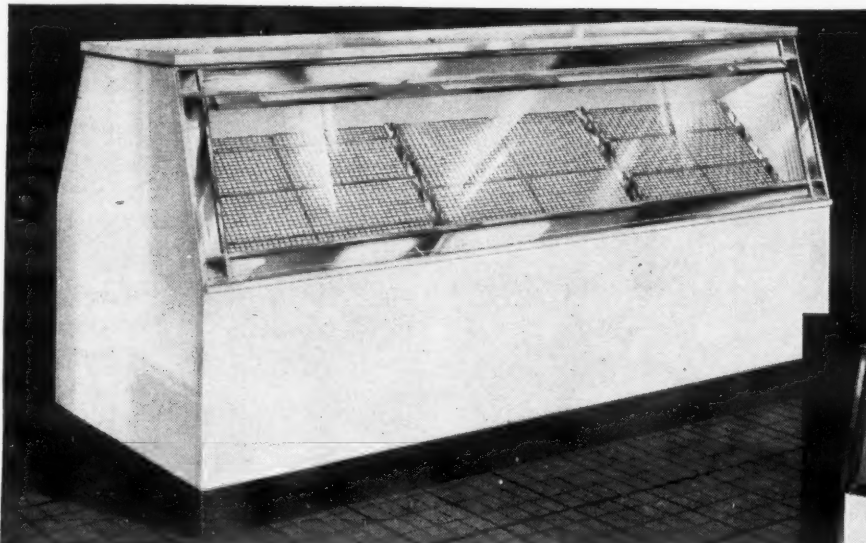
Distribution is somewhat handicapped because a great number of feasible outlets are not properly refrigerated to maintain temperatures sufficiently low to preserve the product. Some distribution of frozen foods has been accomplished through ice cream and dairy depots where consumer purchases are made.

However, the average drug store is equipped with ice cream cabinets which will maintain a temperature low enough to keep the product for a short time, but is most certainly not sufficiently low to store large quantities for several days. This, of course, places an extra cost on jobbers' delivering to retailers.

The use of hot water or any other medium for quickly defrosting the product before using will affect the taste and quality of the product. Frozen foods should be allowed to stand in a refrigerator for approximately three and one-half to four hours in the sealed container, after which time it will be found to be completely defrosted and in the fresh state in which it was packed.

To promote the defrosting of frozen foods, normal hydrant water of about 50 to 70° F. may be run over the package while it is in a sealed condition and if it is desirable to defrost instantly it may be accomplished by opening the package and spreading the contents over a large platter in a normal room temperature. This practice should not be adopted except in cases where the product is to be consumed immediately and in a semi-frozen condition.

New Way ZERO°MATIC Display Cases Stimulate Sale of Frosted Foods

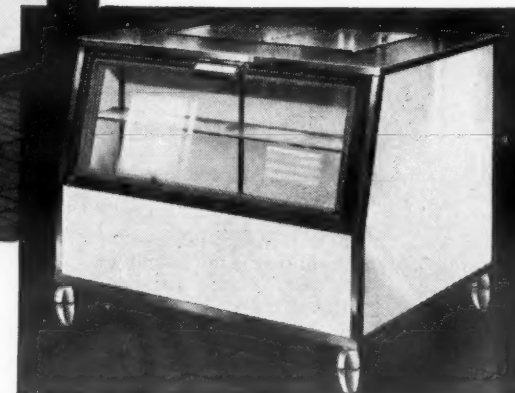


NEW WAY ZERO°MATIC DISPLAY CASE, FRONT VIEW

ZERO°MATIC JUNIOR, 3 1/2 FOOT



PRODUCT OF
GRAND RAPIDS
STORE
EQUIPMENT
CORPORATION
WORLD'S LARGEST
MANUFACTURERS
OF STORE
EQUIPMENT



TO HELP YOU MAKE MORE SALES

If you are a manufacturer, distributor, or dealer, you can use the *Refrigerated Food Section* as a definite aid in the promotion of commercial sales. Simply see that it reaches your commercial prospects.

In the *Refrigerated Food Section* will be found news and information of interest to meat merchants and grocers, chain store executives, ice cream manufacturers, druggists, confectioners, restaurant owners, and all food service establishments.

Your prospects will be better informed on the advantages of up-to-date refrigeration equipment by reading the *Refrigerated Food Section*.

Use the blank below to order extra copies for distribution by your salesmen. Or send to *ELECTRIC REFRIGERATION NEWS* the names of companies to which you would like to have sample copies sent.—Editor.

Order for Refrigerated Food Section

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550 Macabees Bldg., Detroit, Mich.

- ☐ Send _____ copies of *Refrigerated Food Section* for consecutive issues (\$10 per hundred—10c per copy.)
☐ Send *Refrigerated Food Section* for one year (26 issues—\$1 per year.)
Enclosed find ☐ Check ☐ P. O. Order ☐ Cash.

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Send sample copies *Refrigerated Food Section* (no charge) to names given below.

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6-3-31

Complete Line of New-type Storage and Display Cases Created to Meet the Requirements of Newest Development in Food Marketing

TESTS recently made by leading food product manufacturers and distributors have revealed that a revolutionary change in marketing methods is taking place. Experimental retail stores have found a profitable demand for packaged foods and meats—both fresh and frosted. Several of the stores had sales increases of as much as 30% as soon as the packaged foods were offered. Thus an entirely new food market has been opened up to all types of merchants.

The New Way line of Zero°Matic and Chill-O°Matic Display Cases has been created to meet all the requirements of this new industry. Zero°Matic cases in all sizes for display and storage of frozen meat, foods,

fruits and ice cream. And Chill-O°Matic cases for fresh meats. All built by the Grand Rapids Store Equipment Corporation—world's largest manufacturer of store equipment. They incorporate special features of mechanism, beauty and convenience never before approached in frosted or fresh food display cases.

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REFRIGERATION DIVISION
Main Office: Grand Rapids, Michigan
Factories: Grand Rapids; Portland, Ore.; Baltimore; New York City

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

The business newspaper of the refrigeration industry

ISSUED EVERY TWO WEEKS
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DETROIT, MICHIGAN, JUNE 3, 1931

Entered as second class matter
Aug. 1, 1927, at Detroit, Mich.FIFTEEN CENTS PER COPY
TWO DOLLARS PER YEARAPEX MACHINES
BUILT IN RURAL
INDIANA PLANTFormer Wayne Factory
Making 300 Units
Per Week

By John T. Schaefer

FORT WAYNE, Ind.—Pleasant natural surroundings and good interior light from the tall well-cleaned windows of the factory producing Apex electric refrigerators on the outskirts of this town, have been effective in inspiring loyalty and company interest among the workmen, in the opinion of Walter Frantz, vice president in charge of manufacturing of the Apex Rotarex Corp.

The four-story plant was owned by the Wayne Home Equipment Co. here until the middle of February, when the Apex Co. purchased the refrigerator manufacturing operation, organizing it as its refrigeration division. Approximately 25 people in the factory are concerned with the building of Wayne oil burners, while the other 125 are active in the manufacture of Apex refrigerators.

If an employee likes to live in a rural atmosphere, he can do so without being more than 10 or 15 minutes from his work-bench, since the factory overlooks many northern Indiana farms.

In the neighborhood of 300 refrigerators are shipped weekly from the production lines of the plant. Machining and finishing of the compressor blocks is accomplished in the first floor machine shop. Cylinders, connecting rods and compressor bearings are machined, ground and honed, while the pistons and crankshafts are machined, ground and polished in this department.

Before starting the succession of production operations from the fourth floor, all compressor blocks are heated to 1350°F. in automatically controlled gas furnaces for 1½ hours, and allowed to cool slowly. This heat treatment is

(Concluded on Page 3, Column 2)

N.E.M.A. MEN URGE STUDY
OF MARKETS, STATISTICS

HOT SPRINGS, Va.—The study of marketing and distribution problems was urged by speakers at the annual Spring meeting of the National Electrical Manufacturers Association held here, May 17 to 21. They expressed the opinion that these problems could be solved by cooperative effort in the N. E. M. A. more economically and promptly than by other known methods. Three hundred and seventy-five manufacturer's representatives attended the sessions.

At the meeting of the policies division, Malcolm Muir, president of the McGraw-Hill Publishing Co., presented, "A Platform for American Business," and C. H. Hatch, vice president, Miller Franklin & Co., discussed, "Facts and Inspiration in Marketing."

C. L. Collins, president of the association, in his introduction of these speakers, urged that the electrical industry continue the sane and intelligent competition which he felt had continued in this depression longer than in any other industry.

Mr. Muir stated that his survey showed that there were existing at this time two diametrically opposite points of view with regard to the bringing back of our business to normal.

One point of view, shared in primarily by the bankers, was to the effect that the standard of living in this coun-

(Concluded on Page 2, Column 1)

MAJESTIC NAMES H. M. PAULEY
NATIONAL SERVICE MANAGER

CHICAGO—Harold M. Pauley, who has been with the Grigsby-Grunow Co. for the past three years, was recently appointed service manager over all three of that company's lines—receivers, tubes and refrigerators.

His work for the past three years with the Majestic organization has covered technical correspondence with distributors and dealers, preparation of service manuals and service bulletins, and when Majestic went into the refrigeration field, the conducting of sales and service schools on the new product.

Veteran Advanced



John R. Replogle

COURT SAYS DRY ICE
PATENT IS INVALID

WASHINGTON, D. C.—Acting on the petition of the Carbice Corp. to rule upon the validity of Patent 1,595,426, owned by The American Patents Development Corp., and used by the Dry Ice Corp. of America, the Supreme Court on May 18 held that patent invalid on the ground that the solid carbon dioxide container covered by that patent lacks invention and novelty.

The decision followed a period of litigation beginning in the Federal Court of Eastern New York which ruled that the Carbice Corp. was not violating Dry Ice patents; later in the Federal Circuit Court of Appeals which voted that the patent was valid; and on March 9, the Supreme Court here ruled that the Carbice Corp. was not violating Dry Ice rights, but did not pass upon the validity of the patent itself.

On March 16, the Carbice organization petitioned that the court rule also on the validity of the patent. The reason assigned was the inauguration by the Dry Ice Corp. of a campaign of intimidation against customers of the Carbice people, by releasing to the press a statement that the validity of the patent as sustained by the Court of Appeals had not been disturbed; that the true patent monopoly had in no way been limited by the Supreme Court; that the court had indicated that the proper way to enforce the patent monopoly is by suing directly those who use solid carbon dioxide in the patent combina-

(Concluded on Page 6, Column 4)

COPELAND NAMES
REPLOGLE, HUGHES
VICE PRESIDENTSChief Engineer, Factory
Manager Are
Promoted

MT. CLEMENS, Mich.—Two new vice presidents, John R. Replogle, in charge of engineering, and Edward Hughes, in charge of manufacturing, are announced by Louis Ruthenburg, president of Copeland Products, Inc., of this city.

For more than a year Mr. Replogle has served as chief engineer for Copeland. He has been connected with the refrigeration industry for about 15 years, most of which was spent in engineering development work.

In 1919, he was chief engineer of Frigidaire and later was chief engineer of the Nizer Corp., manufacturers of ice cream cabinets. Subsequently, he was connected with the Kelvinator Corp.

From 1910 to 1915, he was head of the inspection and investigation division laboratories of Western Electric Co., and from 1918 to 1919 was director of research for Remy Electric Co. and for General Motors laboratories.

For the past two years, Mr. Hughes has been factory manager for Copeland. Prior to joining Copeland, he was on the engineering board of the Detroit Aircraft Corp. and for three and a half years was in charge of production.

He was also in charge of the designing and construction of the ZMC-2, the first all-metal airship.

Previous to his experience in the aircraft industry, Mr. Hughes was in the Deleo division of General Motors Corp. at Dayton, Ohio.

SORENSEN REPORTS
1,200 ENROLLMENT

CHICAGO—More than 1,200 students are now enrolled for the home training course in electric refrigeration offered by the Utilities Engineering Institute of this city. E. P. Sorensen, president of the organization reports.

Approximately 400 have graduated since the school was incorporated in 1928, he said, and an average of 25 a month are receiving their diplomas at the present time. Students are now enrolled in China, Japan, India, Australia, South Africa, and other foreign countries.

Each of the 48 progressive lessons comprising the course, includes instructional information, and questions to be answered. Lessons are sent to the student as he answers the questions satisfactorily. The lessons are intended for binding when the course is completed.

(Concluded on Page 6, Column 3)

Promoted



Edward Hughes

WOOD CONVERSION CO.
TESTS IN COLD ROOMBy D. H. Corlette
Wood Conversion Co.

IN FOLLOWING the rapid developments of the refrigeration and frozen food industries, the Wood Conversion Co., manufacturers of the Balsam-Wool, has equipped its laboratory at Cloquet, Minn., with complete equipment for making low temperature tests, so they can make definite recommendations concerning the insulation of low temperature refrigerators, trucks, display cases, etc.

For the purpose of studying the varying conditions under which insulating materials are used in the refrigeration industry, the laboratory is divided into two units. The first unit consists of humidity, constant temperature, and control rooms. The second unit consists of a low-temperature set-up to study conditions at mean temperatures of 20° F. or lower.

The test rooms in the first unit are used for the purpose of studying the performance of refrigerators, both ice and mechanical, under varying temperatures and humidities for different climates. In addition, various methods of application of insulating materials used by refrigerator manufacturers are also investigated.

Accuracy of temperature and humidity control is obtained by specially constructed rooms, well insulated, with 4 in. and 6 in. of continuous insulation, and thoroughly sealed against moisture in-

(Concluded on Page 3, Column 4)

800 EVAPORATORS
DAILY IS PRESENT
MULLINSCAPACITYNew Manufacturing Line
To Treble Output of
Salem Plant

By John T. Schaefer

SALEM, Ohio—Manufacture of porcelain steel evaporators by the Mullins Mfg. Corp. of this city is a continuance of that company's policy to diversify its products. Since its diversification plan was started several years ago, the company has added porcelain washing machine tubs, monel metal kitchen sinks, and the cooling unit for the electric refrigeration industry.

The factory is primarily a stamping plant, and has furnished automobile body stampings, general stampings, and the Mullins all-steel boat for many years. The manufacturing organization was founded half a century ago, and now consists of three plants.

Since the production of enameled steel evaporators was started last Fall, the increasing demands for it have taxed the capacity of the present plant whose output is about 800 cooling units daily so that a new straight line production system is being established in another plant. The new set-up will more than triple the present output, and will include modern overhead conveyors and new continuous annealing and enameling furnaces.

The evaporators are fabricated from 18-gauge Armco iron, each being made up mainly of an outer and inner shell which are spot welded together, seam welded, trimmed and shaped to form the cooling unit.

A 1,500 ton press is used to punch the corrugations in the outer shell which form the refrigerant passages when secured to the inner shell. The ends, brackets, and control mounting lugs are welded to the shell by oxy-acetylene.

The evaporators are made in two styles, for use in either high side or low side float installations. In the case of the closed-end evaporators for the high side float type, all assembly weld-

(Concluded on Page 2, Column 5)

RAILROAD REFRIGERATION
DISCUSSED AT FRIGIDAIRE

DAYTON, Ohio—New applications of the electric refrigeration to the problems of the railroad industry were discussed last week when the sub-committee on electric refrigeration of the Association of Railway Electrical Engineers met here with officials of Frigidaire Corp.

Members of the committee were D. J. Thwaites, electrical supervisor of the Pennsylvania Railroad, Philadelphia; P. J. Callahan, superintendent of car and locomotive lighting, Boston and Maine Railroad, North Billerica, Mass.; R. E. Gallagher, assistant electrical engineer, Louisville and Nashville Railroad, Louisville, Ky.; and F. Zimkowski, supervisor of lighting equipment, New York, New Haven and Hartford Railroad, New Haven, Conn.

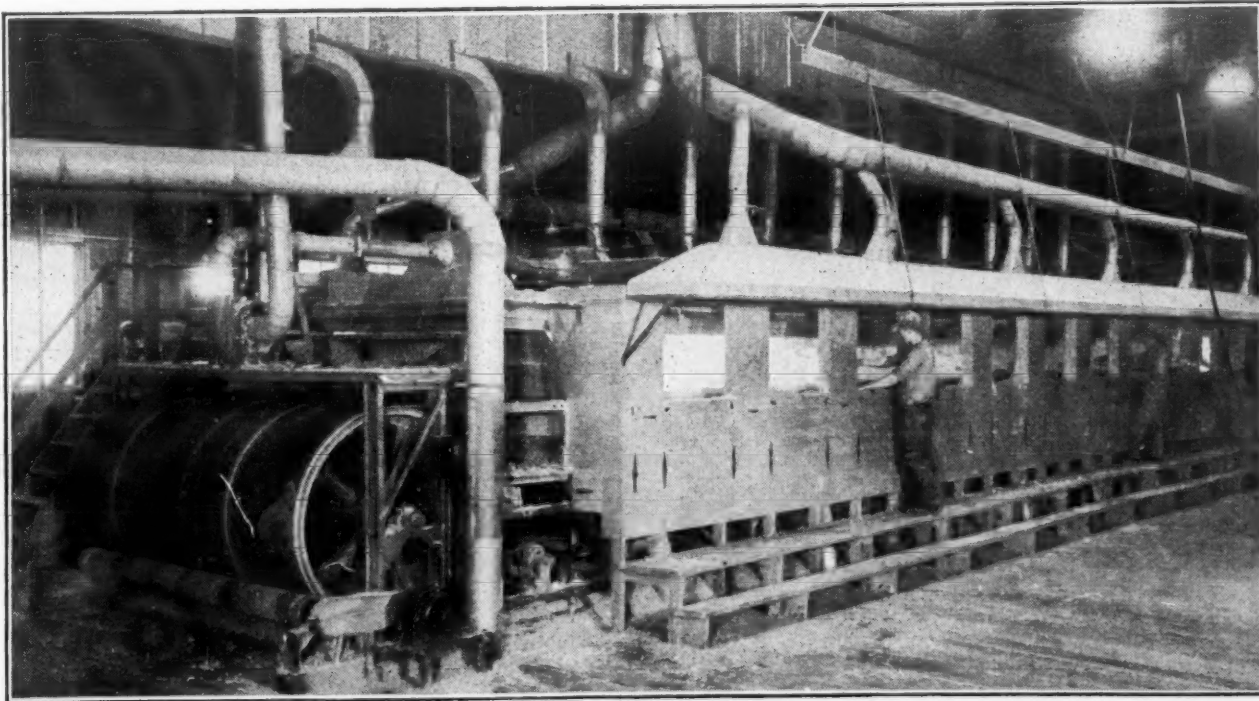
Electric refrigeration for dining cars, air conditioning of passenger coaches, and other phases of refrigeration as applied to railroad problems were discussed. Much interest was shown by the committee members in the Frigidaire installations already made on dining cars of the Chicago, Milwaukee and St. Paul Railroad, the New York, New Haven and Hartford and other lines.

FILTRINE DESIGNS ACCESSORY
FOR PRE-COOLING WATER

BROOKLYN—A small pre-cooling unit that can be attached to electric or ice water coolers of the bubbler type, has been developed by the Filtrine Mfg. Co. of this city. This new accessory has been designed for use where the demands on existing equipment exceed the rated capacity, to pre-cool incoming tap water by making use of the waste water from the bubbler.

By reducing the temperature of the incoming tap water, water cooling capacities can often be increased, and severe peak temperature conditions reduced to a minimum, C. F. Hansel of this company claims.

Forming Balsam-Wool Insulation



Light, loose "wool" is blown from the rectangular overhead blowers through 11 spouts onto a moving screen. This loaded conveyor is sprayed with cementing materials to bind the Balsam-Wool mat.

N.E.M.A. Speakers Suggest Statistical Studies

(Concluded from Page 1, Column 1)
try must come down and that wages must be reduced.

The other viewpoint, from the industrialists, was that our American structure was based on a high productive power and high consumption and that there was no need in reducing incomes to meet commodity prices, it being better to bring back prices in balance with the prevailing wages.

His study indicated that apparently the bankers had failed to meet their responsibilities in not acting as a brake during the period of inflation, and then again in not giving proper support in this time of depression. He pointed out that the main problems which confronted the industry at this time are:

1. The need for more comprehensive industry statistics on which to plan production.
2. The analysis of distribution costs and the development of more efficient methods.
3. The study and extension of markets

through product development and more effective merchandising.

4. The stabilizing of prices through intelligent self-control based on business knowledge that discourages overproduction and over-buying.

5. The improvement of business ethics through codes of practice and cooperation.

6. The encouragement of progress through research and educational activities.

Mr. Hatch next urged that business groups make more complete and careful studies of the markets, and that it was essential that better statistics be available. He particularly pointed out how such studies would develop the sales of wiring materials.

H. J. Mauger, Edison General Electric Appliance Co., urged members of N. E. M. A. to cooperate to a much greater extent in the development of the markets on appliances, and pointed out how such increased business would also create considerable demand for all other kinds of electrical equipment.



American Automatic and American Thermostatic Expansion Valves, also American Castincoil Units

Descriptive literature gladly sent upon request

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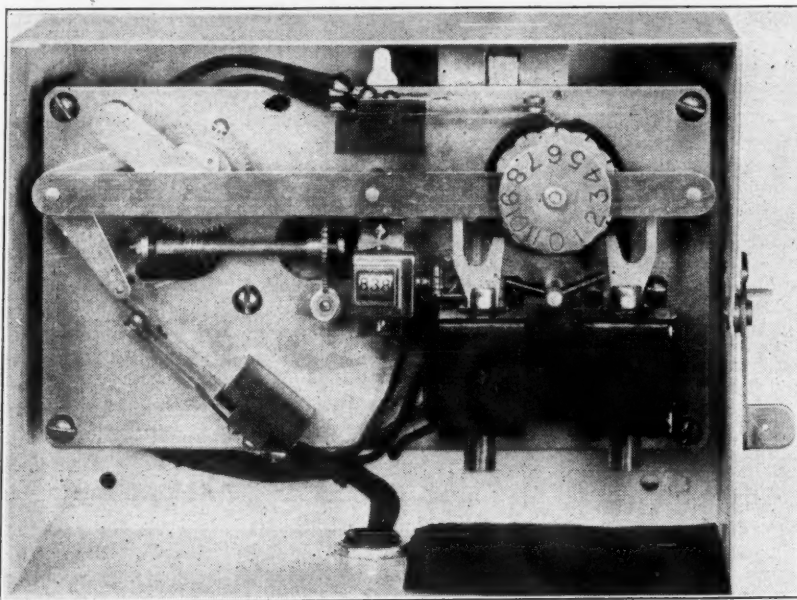
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Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

Metered Refrigeration



This "Meter-Ice" movement, made by General Electric, gives a user 24 hours of refrigeration on deposit of a quarter

MULLINS EVAPORATOR IS ANNEALED, TESTED

(Concluded from Page 1, Column 5)

ing is done with nitrogen gas in the unit to prevent the formation of scale by the welding heat.

The welding processes are apt to leave many stresses and strains in the internal structure of the steel, J. H. Benson, production engineer, points out, so each evaporator is annealed to relieve them. Overhead conveyors (which characterize the whole plant) next conduct the evaporators through an annealing furnace about 40 ft. long, where natural gas tempers the iron with approximately 1650° F. of heat. Nitrogen in the units, here too, prevents internal oxidation of the closed-end evaporators. Another purpose of the annealing is to burn off any oil or die compounds, Mr. Benson says.

Before the porcelain enamel can be applied, the cooling units must be thoroughly cleaned by sand-blasting. Masked operators of two special sand-blasting booths do this all day long, and don't seem to mind their jobs a bit. Fresh air is piped to them via their helmets, and exhaust fans keep the sand from accumulating in the booths.

In a visit to the continuous enameling department, one may be a bit startled to see a washing machine tub preceding an evaporator along the train of conveyor pans, followed, perhaps, by an enameled dish pan. They all go through the same ovens, and get approximately the same treatment.

The cooling units get three coats of enamel, all together; first, a gray ground coat, then a white coat, and last a white finishing coat. The first two are applied by dipping, the last is sprayed on. Leaving the last bake oven, the evaporators continue on their overhead conveyors up to the second floor where the enamel is allowed to set for 12 hours before packing.

Occasionally one is chipped, or the porcelain is uneven. These must go back to the enameling line to have the finish retouched, or to the sand-blasting booth to start over.

Three air pressure tests are applied to the cooling units during the course of the manufacturing process. The first, a leak test, is given after the assembly test is made with 110 lbs. of air, under evaporator being held under water.

A "breakdown" test of 250 lbs. of air follows the annealing, just to insure the unit being structurally sturdy. The final test is made with 110 lbs. of air, under water, to find any leaks which may have appeared during the final operations, and to make sure the enamel will not crack under pressure.

ICE-O-MATIC USED TO TEST STORAGE BATTERIES

DENVER—(UTPS)—The Gates Rubber Co. here recently installed a Williams Ice-O-Matic refrigerator to test storage batteries for cold weather starting. The case was built by the Foster Auto Supply Co., distributors for the Williams Ice-O-Matic refrigerators.

It is 9 ft. 8 in. long, 30 in. wide and 26 in. deep, and is capable of taking care of 40 storage batteries. The unit reaches to 8° below zero.

BALSAM-WOOL SALES IN 1931 EQUAL ENTIRE 1930 OUTPUT

CHICAGO—Industrial sales of Balsam-Wool and Balsam-Wool sealed slabs for the first months of this year practically equal those of the entire year of 1930, according to D. H. Corlette, sales manager for the railroad and industrial department of the Wood Conversion Co., whose offices are here. Several departments of the mills are running 20 and 24 hours a day to take care of the rush orders of refrigerator manufacturers, Mr. Corlette reports.

FRIGIDAIRE MORaine PLANT HOLDING OPEN HOUSE

DAYTON, Ohio—The Frigidaire plant at Moraine City is open to public inspection for three days, June 2, 3, and 4. The occasion is an "Open House" which the corporation is conducting to acquaint residents of Dayton and neighboring cities with plant operations. Arrangements have been made for the accommodation of 50,000 visitors.

The plant is open to the public each of the three days from 2 to 5 o'clock in the afternoon, and from 6 to 9 o'clock at night. A card, exchangeable for a souvenir, is given each woman visitor. On June 1, both Frigidaire plants went on a production schedule 33 per cent above that of May.

FLAKICE DESCRIBED BY FIELD TO CHICAGO ENGINEERS

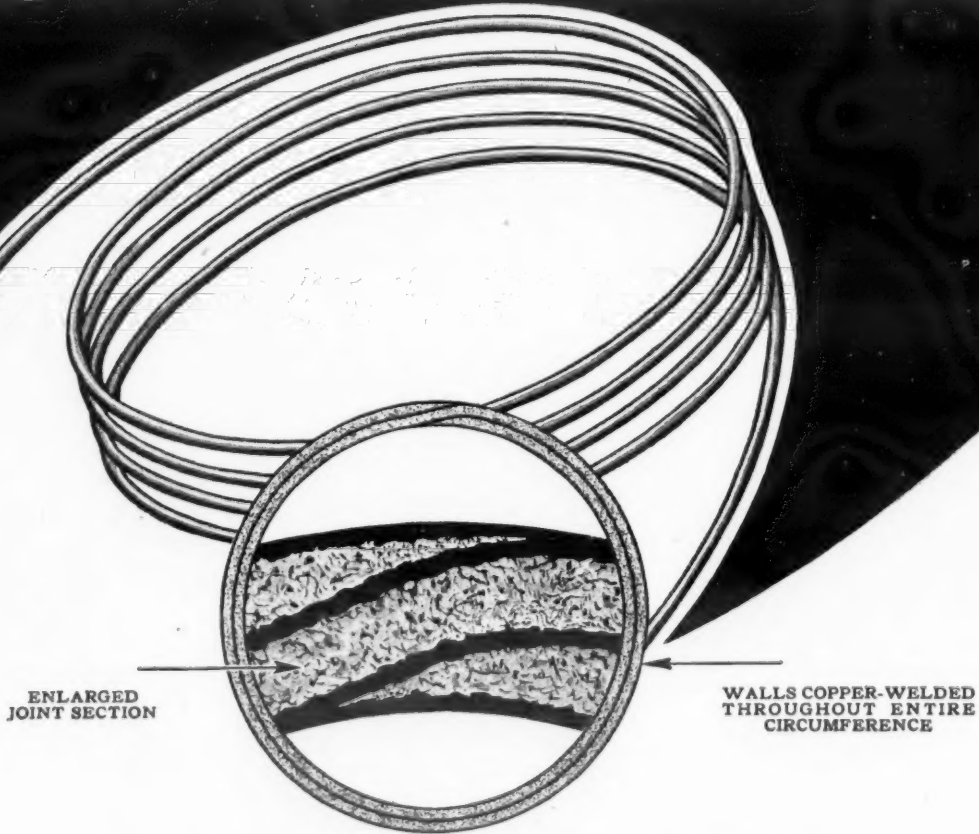
CHICAGO—Crosby Field, president of the Flakice Corp. of New York City told about the manufacture and use of Flakice as a refrigerant, at the May 12 meeting of the Chicago section of the A. S. R. E. Approximately 40 refrigerating engineers attended the meeting, with O. A. Anderson in the chair.

Mr. Field's address was illustrated with lantern slides, and was augmented by considerable discussion by members of the section.

ARMCO PRODUCING 'HIPERNIK,' HIGHLY MAGNETIC METAL

MIDDLETOWN, Ohio—Arrangements have just been completed between the American Rolling Mill Co., here, and the Westinghouse Electric and Mfg. Co. for the former company to produce "Hipernik," a new highly magnetic metal which Westinghouse was granted a patent on this week.

BUNDY WELD



Here is the new Bundyweld double-walled, copper lined and coated steel tubing, which has of late been receiving such marked attention at the hands of refrigerator engineers.

For with cooling qualities equal to that of copper, and with great vibration resistance, the economies resulting from its use are compelling the attention of all thoughtful executives.

The two walls of the tube are copper welded together throughout its entire circumference resulting in a tube of great strength. Absolute uniformity in wall thickness and a clean inside surface free from scale also result from its method of manufacture.

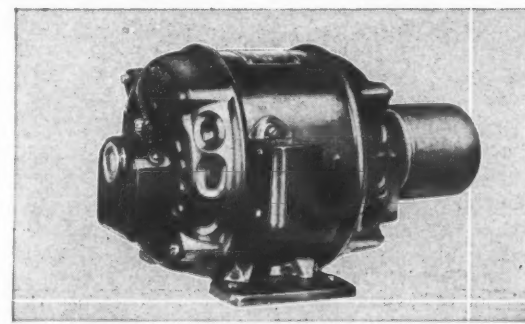
Bundy tubing of various types has long been in use in the motor car industry where 65% of all gasoline and oil line tubing used is Bundy tubing.

Bundyweld is furnished completely fabricated, or can be furnished in lengths for your own fabrication. In sizes 1/8" to 3/4" diameter.

Write for further information or illustrated literature

BUNDY TUBING COMPANY
4815 Bellevue Ave. :: :: Detroit, Michigan

THEY KEEP A-RUNNING



1/2 Horsepower Century Type SC Squirrel Cage Induction Motor

LONG LIFE BEARINGS SERVICE CONTINUITY ASSURED

Century sleeve bearings last . . . They are made with thick walls from Phosphor Bronze castings—with machine-cut figure 8 oil grooves, which assure even distribution of oil over the entire bearing areas and when pressed into the bearing housing, more than half of the outside area is in contact with the cast iron end bracket. The 1 horsepower and smaller sizes are equipped with the Century Wool-Yarn System of Lubrication which assures at least one year's continuous 24-hour-per-day operation without re-oiling. The larger sizes are oil ring lubricated.

Grease-lubricated ball bearings can also be furnished. Century Type SC Squirrel Cage Motors are built in sizes from 1/4 to 250 horsepower.

CENTURY ELECTRIC COMPANY
1806 PINE ST. - ST. LOUIS MO.

40 U. S. and Canadian Stock Points and More Than 75 Outside Thereof

Century
MOTORS
FOR MORE THAN 27 YEARS AT ST. LOUIS

REFRIGERATION TESTS FROG WHEN DRUGGED

BALTIMORE, Md.—A unique use for electric refrigeration has been discovered at the school of pharmacy in the University of Maryland, where Prof. Marvin R. Thompson is head of the physiological drug testing laboratory.

Here an electric refrigerator controls the temperature of water in which are placed hundreds of frogs, which are used to assay and standardize drugs such as digitalis, strophanthus, squill, apocynum, convallaria and others through biological methods.

Chemical assay and standardization of these drugs is impossible, because of their peculiar quality, according to the university pharmacists. However, the frogs serve as a most suitable test object. In order to secure the greatest accuracy and dependability in determining quantitatively medicinal activity of these drugs, there are certain factors which must be very carefully controlled.

Perhaps, the most important of these is the temperature at which the test frogs are kept, both before and during the actual test. According to Prof. Thompson, the water must be constantly maintained at a temperature of 20° C.

The apparatus, which was designed by Prof. Thompson for research and instructions, consists of a heavily insulated temperature regulating unit, an assay tank containing 200 specially constructed individual compartments for containing the frogs after being injected with the drugs and a storage tank capable of accommodating approximately 500 frogs. The water is always changing and the temperature must be kept at 20° C.

A General Electric refrigerator is used to cool the water, the installation having been made by J. Howard Wilkens, commercial manager for the Hines Co., General Electric distributor in this city.

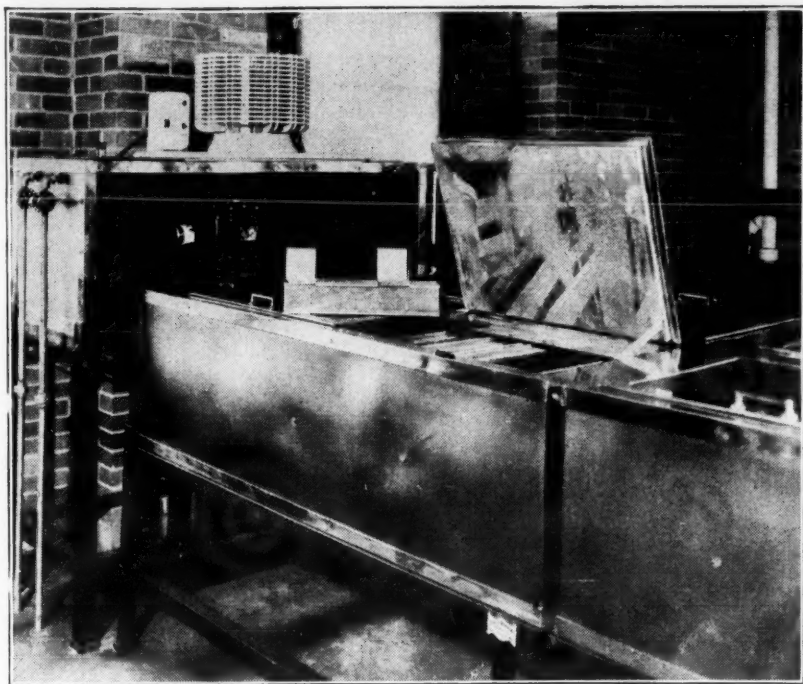
The fact that changes in temperature of a degree or more will affect the susceptibility of the frog to action of the drug, is responsible for the necessity of exercising rigid control of the temperature. Since it is impossible to maintain a constant temperature as low as 20° C. without a cooling system, the apparatus designed by the George H. Wahmann Mfg. Co. of Baltimore, is designed to utilize an electric refrigerator.

As soon as the temperature of the water in the tank rises above 20° C., a thermo regulator starts the refrigerator unit. When the temperature has been brought down to the proper level by the unit, refrigeration is automatically stopped. With this arrangement, the temperature has been maintained within .05 of a degree for as long periods as desired, Prof. Thompson states, a sensitivity entirely satisfactory for conducting quantitative physiological tests.

BELDEN FURNISHING CORDS IN FOUR NEW COLORS

CHICAGO—The Belden Manufacturing Co., of this city, announces that their cut cords are now furnished with soft rubber plugs in four new colors, blue, green, red, and gray, in addition to the black and brown cords.

Cooling Frogs To Study Drugs



Special refrigerated tank to test frogs' reactions to certain drugs.

Apex Plant Uses Straight Line Production

(Concluded from Page 1, Column 1)

given to remove the internal strain from the castings and to prevent warping, according to Frank Andrews, chief engineer.

The castings are then tested for leaks with 150 lbs. of air pressure under water, cleaned in a continuous Okite washer, and given a naphtha bath. Compressor assembly is next, and the 12-hour run-in on the racks, with mineral oil in the crankcases. Each flywheel is balanced to fit its compressor by drilling holes, and attaching weights at the necessary place on the wheel.

After the running in, the compressors are taken apart, inspected, and washed in hot water and naphtha. Reassembly and charging with the proper amount of oil prepares the machines for the efficiency booths, where every compressor must pump a 25 in. vacuum against a head pressure of 75 lbs. At the same time the wattage consumption, and discharge and suction valve actions are checked.

If its performance meets standards, the compressor rolls around the conveyor to the assembly line, and is mounted on the machine base together with the liquid receiver and condenser. Now the moisture must be removed in gas ovens at a temperature of 200° F. Here they are baked together with the cooling units for 12 hours, with a 26 in. vacuum drawn. Apex refrigerators use both alcohol tank evaporators of their manufacture, and Castincoil aluminum cooling units.

After the dehydration process, the compressor assembly moves around past the men who mount the motor, and then

to the refrigerant charging board where a complete vacuum is drawn, and the proper amount of sulphur dioxide is fed in. The assembled high side is then operated in the sound-proofing room to detect any foreign clicks or noises, from where it is conveyed to a testing department for an eight-hour test run.

By elevator the machines are taken down to the third floor for assembly in the Seeger cabinets, and the final tests of their operation as completed domestic refrigerators.

BEAMENS DERFER DESCRIBES EVAPORATING SYSTEMS

NEW YORK CITY—Local refrigerating engineers heard J. S. Beamensderfer, research engineer for the York Ice Machinery Corp. talk on "Refrigeration Evaporating Systems," May 20, following the monthly dinner of the A. S. R. E. section here.

George R. Fitts, director of the executive committee of the Dairyman's League gave a short talk on the value of refrigeration in the dairy business.

FITZPATRICK, HAINS ADDRESS PHILADELPHIA ENGINEERS

PHILADELPHIA—T. H. Fitzpatrick of the Alco Valve Co. talked on "Automatic Controls for Refrigerating Equipment" at the May 22 meeting of the Philadelphia section of the A. S. R. E. D. B. Hains of the Balsa Wood Co. also spoke, treating the subject of refrigerated truck bodies.

Wood is Ground, Pulped, Defiberized, Matted, Fabricated to Balsam-Wool

(Concluded from Page 1, Column 4)

filtration. The heat is supplied by electric resistance units in both rooms, and is thermostatically controlled to within one-half of one degree over long periods.

The air in the humidity room is circulated by fans, and by means of narrow ducts both in ceiling and floor and series of baffles, the air is caused to move at a very low rate of speed which permits closer regulation of temperature and humidity.

Temperatures of 100° F. and a relative humidity of 95 per cent can be maintained for accelerated tests. Control of temperatures is maintained by Bristol thermostats, and continuous records of temperature are made on a Leeds and Northrup multiple-point recorder, located in the control room. This room also houses all instruments, switch panels and thermo-couple leads—a system of control which minimizes the opening and closing of test rooms during the periods of test.

Balsam-Wool Insulation, made from northern coniferous trees, has been developed as part of the consistent conservation program carried on by the Weyerhaeuser interests. It can be made from those products of saw-mills that are sound, but too small in size to have other commercial value.

The process of converting wood into "wool" is interesting from an engineering standpoint. First, the wood is passed through what is known in sawmill parlance as a "hog," which grinds it into small chips. These are screened to remove bark, knots and foreign material, and blown through pipe-lines to storage bins.

To remove resins and lignins, the chips are cooked with specially prepared chemical solutions about four hours, in giant pressure digesters, holding about five tons each, and washed thoroughly in washing tanks. The cooked and washed chips are then reduced to a pulp by means of a machine which separates the fibers instead of breaking them—the long fibers are a special feature of Balsam-Wool insulation.

After the free water is squeezed out by means of enormous presses, the pulp is given a thorough fire-proofing treatment, the chemicals used being repellent to rodents and vermin. The pulp is now dried and placed in overhead hoppers for temporary storage.

Next, the Balsam-Wool fabricating machine, which operates at a terrific speed, completely de-fiberizes the pulp, and forces the refined, fluffy fibers through screens—newly made "wool" ready for matting and making up in blanket form.

The special matting process, perfected after a great deal of study and experimental work, is an engineering accomplishment worthy of note, the unique blower system being particularly interesting.

The accompanying illustration portrays one of the distributors, which is about 40 ft. long. The lower part consists principally of a housed, moving screen about nine feet wide. Overhead are 11 equidistant distributor heads

which receive the Balsam-Wool through feeder pipes connected with the overhead rectangular distributor. Through these distributor heads, the soft, woolly product is deposited on the moving screen as gently and uniformly as falling snow mantles the ground.

The "flow" of the fibers through the distributor heads is so finely regulated that there is uniformity not only in the laying of the wool-like fibers on the screen, but also in the attainment of the thickness.

As the "wool fibers" are being deposited on the moving screen, a series of sprayers continually eject a very fine spray of cementing compound into the forming mat. This binds the fibers together. The fiber mat passes into a steam drier where it is sterilized and thoroughly dried.

Ready for the application of the paper liners, it passes uninterruptedly on to the "blanketing machine," a ponderous unit whose rolls of paper and series of rollers and moving paper give it the appearance of a printing press.

Aside from applying the covers to the mat, this machine performs two other important functions, namely, applying a coating of pure asphalt to the paper covers, making them impervious to wind and water; and creping the paper before it is applied, which gives the blanket a 20 per cent stretch and resiliency.

The manufacture of Balsam-Wool Insulating Blanket is now virtually complete. There remains only the trimming and cutting.

As the nine-foot blanket emerges from the blanketing machine, it passes under a series of printing rollers which imprint, at intervals, the trade-mark, "Balsam-Wool Blanket—It tucks in," and the foot measure marks. Thence it passes through a series of knives adjusted to cut it into widths and lengths.

The Balsam-Wool Blanket is now ready for marketing. The trade-marked and trimmed strips are rolled on cores in much the same manner that rugs might be rolled side by side on a carpet pole. The completed rolls are removed from the core, wrapped in heavy protective paper, sealed, trade-marked and instruction pasters attached, and the product is ready for the customer.

BOSTON FIRM TO HAVE LARGE ICE, FISH PLANT

BOSTON—Plans for the construction of an ice-making and fish-freezing plant are being made by the Massachusetts Fish, Ice and Cold Storage Co.

It will be built at Pier 4 of the New York, New Haven & Hartford Railway Co.

A 100-ton ice field is now under construction, as well as a storage room to hold 1,000 tons of ice.

The ice field is expected to be ready for operation by June 1. The fish-freezing unit will hold 100,000 pounds of fish and has storage room for 1,000,000 lbs.

The Frick Co. of Waynesboro, Pa., is installing all of the refrigeration equipment.

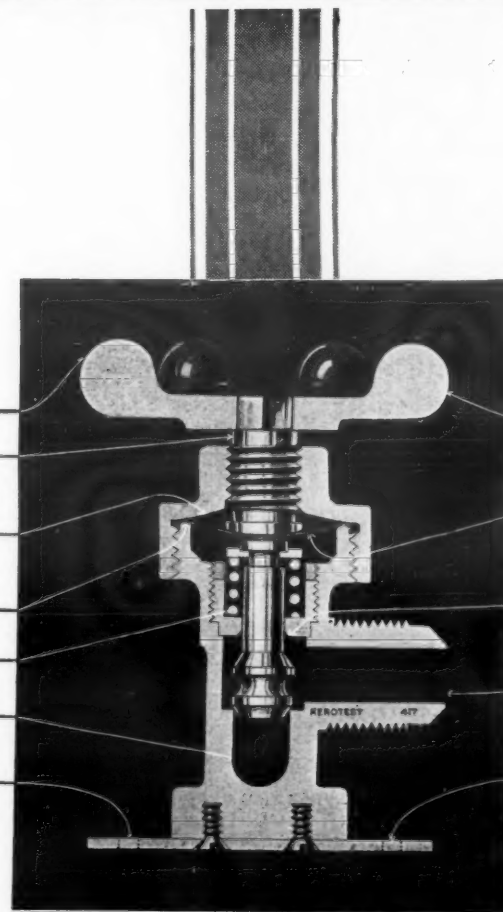
KEROTEST multiple diaphragm REFRIGERATION VALVES

Multiple monel metal diaphragms . . . impervious to all refrigerants . . . replaceable with valve under pressure . . . no soldered joints . . . unrestricted openings . . . PRESSURE TESTED TO 11,250 POUNDS BY UNDERWRITERS' LABORATORIES IN FULL OPEN, HALF OPEN AND FULL CLOSED POSITIONS . . . ALSO TO DURABILITY TEST OF 50,000 CYCLES OPEN AND CLOSED. Get all the facts and prices from your nearest distributor today.

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Only 3 1/2 inches high when full open
Strong bronze stem of generous proportions
Radius in forged brass cap fully supports diaphragm when stem is in full open position
Metal seal of cap, diaphragm and body
Chrome plated strong steel spring, reciprocating movement of handwheel
Unrestricted openings equal to inside diameter of tubing
Heavy steel mounting flange, Cadmium plated



Large handwheel specially knobbed for firm hand grip
Multiple Monel Diaphragm impervious to all refrigerants—replaceable with valve under pressure
"Pressure tested" metal to metal back seat when stem is in full open position
Maximum size 1/2-inch S.A.E. on all 3 openings
Holes in mounting flange accessible for attachment in shallow knockout boxes

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TRUPAR INTRODUCES NEW WATER COOLERS

DAYTON, Ohio—Three types of water coolers have been introduced by the Trupar Mfg. Co. of this city, the bubbler and glass filling models for city water connections, and the faucet type for cooling bottled water.

They are finished in crinkled cream lacquer, with black porcelain tops and chrome fittings. The compressor unit, mounted in the bottom of the cabinet, is a standard Trupar high side with some modifications in design for water cooling duty, according to F. C. Geiler, chief engineer. The cooling unit is manufactured by the D. A. Ebinger Sanitary Mfg. Co.

The new water coolers have a capacity of three gallons per hour, cooling the drinking water from 80 to 50° F., Mr. Geiler said.

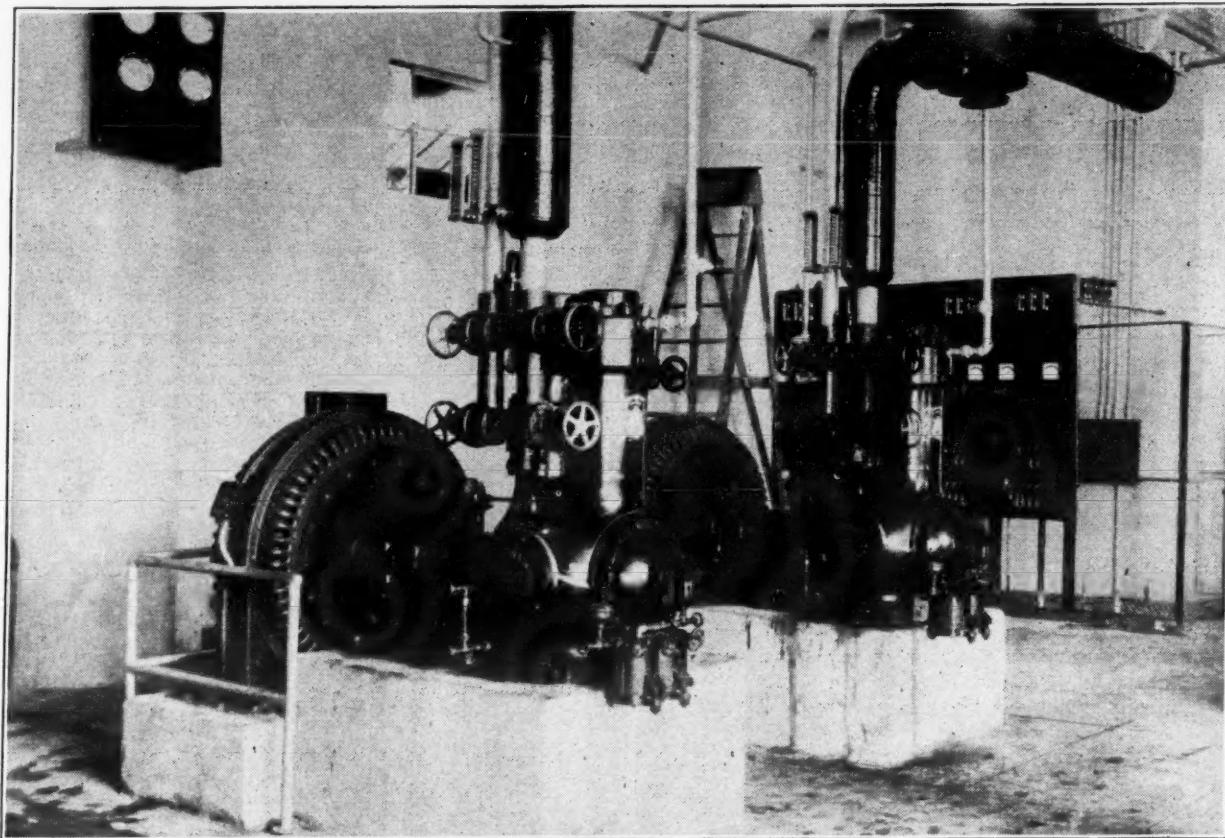
CHARLES H. DAVIS DISCUSSES NON-FERROUS ALLOYS

BRIDGEPORT, Conn.—The New Haven chapter of the American Society for Steel Treating heard Charles H. Davis, assistant metallurgist of the American Brass Co., Waterbury, discuss the "Relation of Structure to Physical Properties of Some Non-Ferrous Alloys" at a May 22 meeting at the University Club here.

WESTINGHOUSE NAMES TRITLE GENERAL MANAGER

EAST PITTSBURGH, Pa.—J. S. Tritle was elected vice president and general manager of the Westinghouse Electric & Mfg. Co. on May 27 by the board of directors. In his new position, Mr. Tritle will retain his headquarters here.

Baker Ice Machines Preserve Western Fruits in Los Angeles Terminal



New refrigeration equipment, and additional space will practically double the storage capacity of the State Products Terminal Warehouse in Los Angeles. The enlarged facilities will be ready for the movement of this year's fruit crop, according to Maj. C. L. Tilden, who is directing the expansion.

COLD STORAGE PLANT INCREASES CAPACITY

SAN FRANCISCO—(UTPS)—Contracts totaling \$78,973 have been awarded by the State Board of Harbor Commissioners to enlarge the present facilities of the State Products Terminal Warehouse to take care of the increased demands for cold storage capacity which will be occasioned by the opening of the new \$500,000 Third St. bridge.

The contracts will provide for alterations and additions to the present structure, new cork insulation, more refrigeration machinery and piping, and modern elevators. The pre-cooling facilities for the coming season will be twice what they were during the first season of operation, in 1930, according to Maj. C. L. Tilden, president of the board. Work is now begun, and the facilities are expected to be ready for the movement of this year's fruit crop.

The installation consists of a power plant, located on the first floor of the building, seven cold storage rooms on the second floor, and a provision for future expansion by adding more stores.

The building is constructed of reinforced concrete, 812x135 ft. on the ground floor, while the upper story is 812x102 ft.

The seven cold storage rooms provide storage capacity of 210,000 cu. ft., or speaking in terms of apples, 3,000 tons or 90,000 boxes. When the equipment is expanded to take in the entire second floor, this will be increased to 630,000 cu. ft., or space for 270,000 boxes of apples.

When all three sections of the present building are used, the capacity will be increased to the figure of 2,500,000 cu. ft.; these figures all leaving out the area of the first floor, which is used for transit shed purposes in handling cargo. The excess amount of machinery and equipment installed permits of expanding the capacity of the plant double and triple on short notice.

The building is closer to shipside than any other refrigeration terminal on the Pacific Coast, being within 65 ft. of the center of the hatch of the average ship. In addition to this, the building, which is located between Third St. and the Embarcadero (the two main arteries for harbor traffic), is so planned as to make possible the minimizing of handling and rehandling hazards.

A wide concrete ramp leads from the Embarcadero and Berry St. to a covered saw-toothed receiving platform, making it possible for trucks to unload within 10 ft. of the storage room doors. Ample facilities are available for direct transfer from the second floor to the ship, and delivery to the first floor is handled by modern elevator service, and by spiral chutes in the shipside corridor of the plant.

The brine circulation system of refrigeration has been installed. Refrigeration is supplemented by an air duct system of ventilation for the care of products which can best be handled by applying combined refrigeration and air circulation. A fixed type of ozonizer manufactures ozone, and pipes it to each storage room, where its flow can be regulated to rectify atmospheric conditions obtaining where large quantities of fruit are in storage. The walls and pillars are insulated with four inches of cork, while the ceiling has five.

CONTINENTAL-DIAMOND FIBRE OFFERS NEW INSULATION

NEWARK, Del.—A new insulating material is being produced by the Continental-Diamond Fibre Co. of this town, according to a recent announcement. The insulant is known as Dilecto K-4, and is applicable for breaker strips on refrigerator cabinets, engineers of the company claim. It is furnished in sheets, rods, and tubes, and can be machined.

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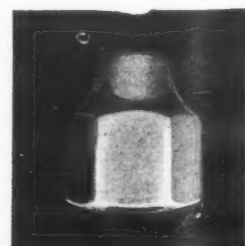
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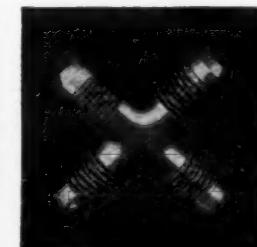


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A positive acting mercury switch mounted directly on a non-corrosive bimetal spiral is the basis for this simplest and most successful of all commercial refrigeration controls.

The 149 Airswitch is sturdily built. Notable is the absence of intermediate bearings and linkage. There is immunity to dampness and dust—sensitiveness is a permanent and dependable quality.

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MINNEAPOLIS-HONEYWELL
and TIME-O-STAT
Refrigeration Controls

All types of Commercial Refrigeration Should Have Direct Temperature Control

AIR CONDITIONING IS USED BY NEWSPAPER

NEW YORK CITY—Because properly conditioned air has been found necessary to keep news print stock at a certain standard in testing for newspaper printing, the *New York News* recently installed Parks-Cramer air conditioning equipment in connection with a Copeland W-825 condensing unit, and a Copeland model 50 ice water generator.

"Numerous experiments indicate that many physical properties of paper are affected by the relative humidity of the atmosphere," according to William Baumbrucker, Jr., technician of the News Syndicate Co., here. "Paper must be tested for weight, burst, density, finish and color. Therefore, it is desirable to control hygrometric conditions of all paper before testing, to insure uniform results."

"The Technical Association of the Pulp and Paper Industry has adopted 65 per cent relative humidity at 70° F. as the official hygrometric condition for the testing of paper, and this standard has been used for many years."

"A laboratory doing paper testing such as carried on by the *New York News* must always be sure that its results are reliable, by testing under standard air conditions, and by always conditioning the paper in standard atmosphere before testing," Mr. Baumbrucker pointed out.

This installation is a typical one for this type of work, L. F. Ross, sales engineer for the Parks-Cramer Co. states, although the size of the air circulating fan and the number of nozzles spraying cold water into the atmosphere may vary in different plants. The air conditioning duct appears in the corner of the room, pictured on this page.

The water supply enters the unit through a float valve, maintaining a level in a tank in the bottom of the duct, Mr. Ross explained. "The suction of the water circulating pump is taken either direct to the spray nozzles or through the water cooler, as conditions dictate."

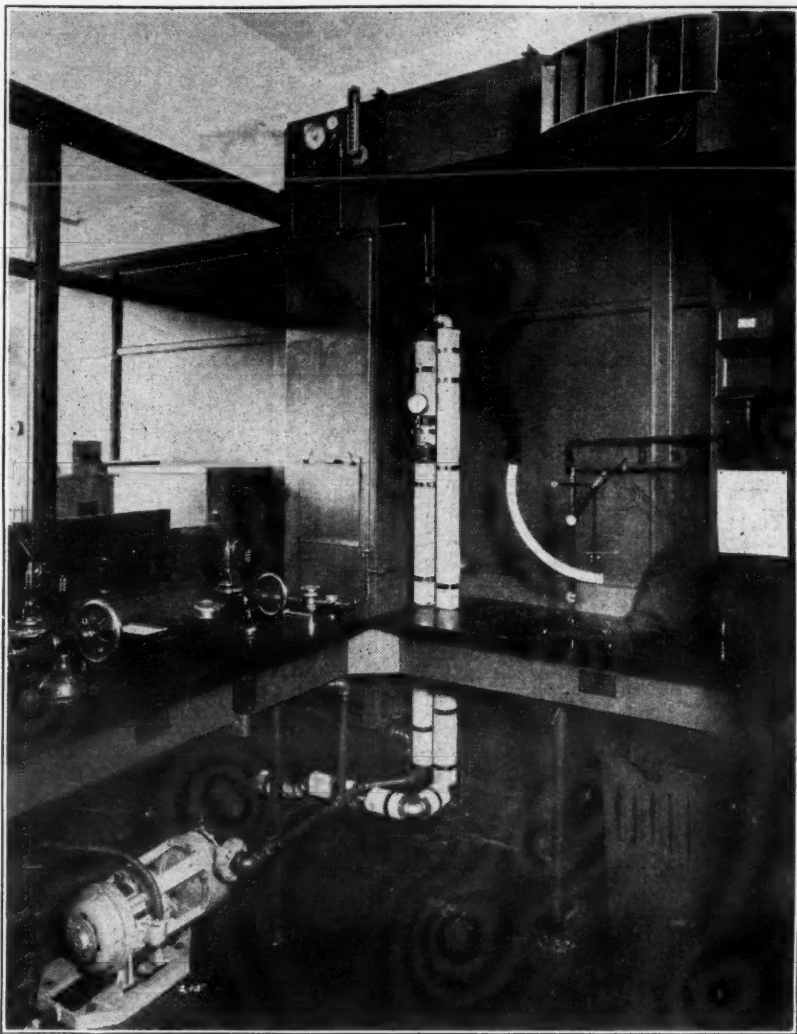
"The three-way diaphragm valve appearing above the asbestos covering of the pipes in the photograph, is operated automatically to admit to the spray nozzles directly inside the duct, either recirculated water, fresh cold water, or a mixture of the two, maintaining the required dew point temperature in the unit."

"By using a closed cooler," he said, "it was possible to make the connection from the pump discharge either direct to the nozzles or through the cooler."

"When dehumidifying is not required," he continued, "the water is recirculated directly from the tank to the spray nozzles. However, when the temperature or the humidity tends to rise above the predetermined point, the three-way valve starts to shut off the recirculated water, admitting water that has passed through the cooler, and producing a lower temperature in the spray chamber, and a lower resultant saturation temperature."

"This saturated air is then reheated to the desired temperature by the electric heaters, used in this case because no steam was available in this room during the non-heating season."

Preparing Air for Paper Tests



Copeland refrigeration, and Parks-Cramer air conditioning equipment combine to temper air for the *New York News*. A three-way valve controls the cold water spray in the duct appearing in the corner.

"The automatic control features of this equipment are a room temperature thermostat regulating the electric heaters to control the room temperature, and a dew point thermostat located in the conditioning unit just above the eliminator plates. Consequently, the 3-way valve on the water supply to the spray nozzles, controls the saturation temperature of the air, and maintains the dew point, so that when the air is reheated to the required room temperature, it will issue at the proper relative humidity," he says.

"Within the limits of the capacity of the equipment, the room temperature and the relative humidity maintained can be varied by adjusting the two thermostats to the proper settings," Mr. Ross claims. "To assure even distribution of the air throughout the testing room, there is a diffusing outlet on the discharge of the fan. This is simply a connection on the fan with a series of vanes, so that the air is properly distributed around the room," he concluded.

Line of Five New Water Coolers Announced By Frigidaire Corp.

DAYTON, Ohio—Frigidaire Corp. has announced a line of five new water coolers, first shipment of which has already been made to the Empire State Building, in New York, where they will be used to supply tenants. Refrigerating units of the new line are covered by a three-year guarantee, according to the announcement.

The coolers are finished in metallic lacquer with chrome plated hardware. There are models for bottled water and for city pressure. Three of the new coolers are of the individual type for use in offices, shops, and small mercantile organizations. There are two larger units to meet the requirements of general offices and industrial plants. These two units for bubbler service are designed to utilize the cold waste water to pre-cool the warm incoming water.

In addition Frigidaire will continue to build two tank type coolers for large factories and public places. The larger of these two tank type coolers will provide cold drinking water for a maximum of 250 people, the factory announcement says.

One type of office cooler is equipped with an acid resisting porcelain-lined refrigerated compartment that maintains an average temperature of 45° F. It is approximately 5 in. wide, 12 in. deep, and 12 in. high. It will hold 10 bottles of soft drinks, or three quart bottles. An automobile type door lock protects the contents of the compartment.

Capacity of the smallest type water cooler is three gallons an hour.

The cooler is mounted on four legs which are high enough to allow cleaning the floor beneath it. The compressor is mounted in the base of the cooler, with spring and rubber suspension for quiet operation. One-fifth hp. motors

are used in the smaller units, and ¼ hp. motors in the large unit. Two cylinder compressors operating at a speed of 290 R. P. M. are used in all models.

The coolers are designed for plug-in installation, and may be obtained equipped with either A. C. or D. C. motors. All parts coming in contact with water are designed to be rust-proof. The water reservoir in the top of the coolers for bottled water is silver plated. The continuous self-cleaning tubes of the water cooling coil is tin-plated copper. The drip basin is made of chromium plated brass.

The finger tip faucet is so arranged that it is possible to obtain a glass of water with the use of one hand. Double tube construction of the faucet makes it non-sweating, the engineers claim. Compartment hinges are concealed. All individual coolers designed for faucet service are delivered with a bracket and lug for affixing a standard cup holder.

The new coolers occupy a floor space 19 in. square, and are 43 in. in height.

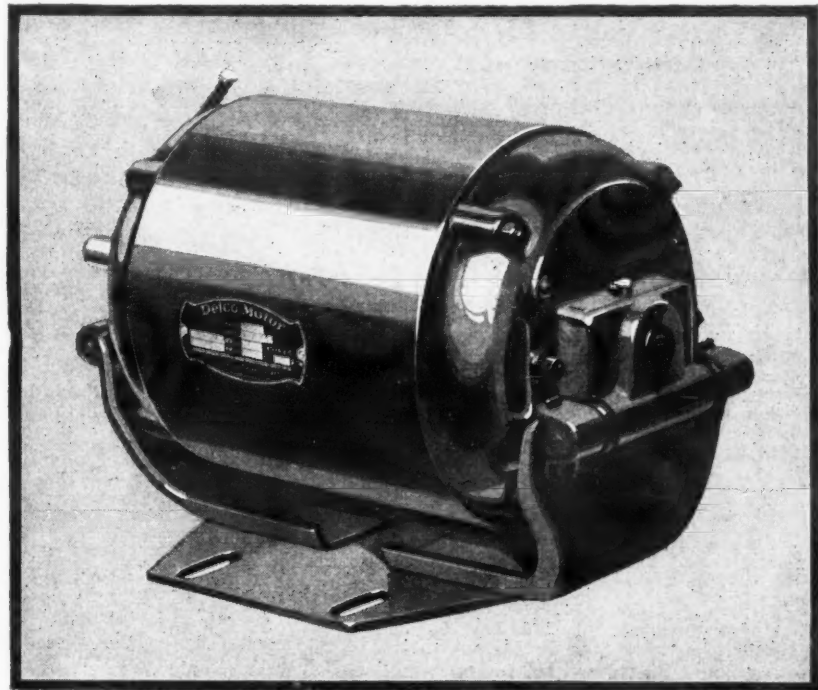
Fulco REFRIGERATOR COVERS



Insure deliveries without scratches or broken enamel. Write our nearest plant today for prices, giving dimensions of your boxes. We also make Dust Covers.

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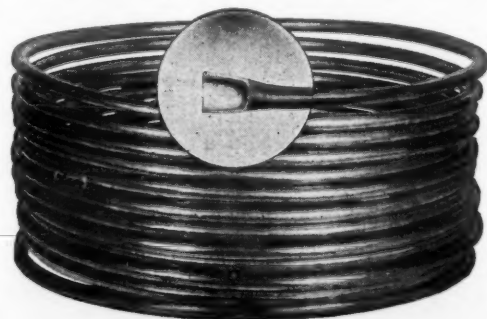
REFRIGERATOR MOTOR IS DIFFERENT

A refrigerator motor must be quiet. Even the hum of a well-balanced, perfectly-built motor of the conventional type will not be tolerated. Noisy refrigerators do not sell. That is why Delco engineers have spent years of tireless research toward the elimination of motor noise. They have incorporated a brush-lifting mechanism with special take-up spring on the bracket inside the motor — for the elimination of noise. And to eliminate magnetic hum, they employ a cradle of special design, that suspends the motor in sound-absorbing rubber. Over two million of these refrigerator-type motors have given satisfaction. Dependable field service for Delco motors is provided through the nationwide facilities of United Motors Service.

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ENGINEERING SECTION ELECTRIC REFRIGERATION NEWS

The Business Newspaper of the Refrigeration Industry

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Parts for the Service Man

MANUFACTURERS of electric refrigerators are still at variance in their policies of supplying independent service companies with repair parts for their machines.

Springing up all over the country within the past two or three years, these companies have helped to take the service burden from the shoulders of the manufacturers, with small, independent commercial operations.

Since the maintenance of good operation of refrigerators in consumers' homes is an important matter to the industry, the question of supplying parts to these men who propose to keep the machines going well, should be studied, and the best plan adopted.

Several manufacturers have evidenced a co-operative attitude toward the independent service man, furnishing him with service manuals, and selling repair parts and materials at prices which just cover the production cost and a reasonable profit.

Satisfactory Relations

They regard the small, unallied organizations as supporting adjuncts to the success of the industry, and are helping to make their operations commercially profitable. To all appearances, relations have been quite satisfactory between service men and manufacturers who have displayed this confidence in the independent service activity.

Other manufacturers, manifesting more conservatism, have refused to sell repair parts to any service stations except those officially identified with their own organizations. They feel that unless a man has studied the principles of refrigeration in their own schools, and knows the service practices recommended by their own company for that particular machine, he isn't qualified to repair it.

In some instances private service operators have requested price and delivery favoritism in the purchase of repair parts. Naturally, manufacturers have refused, and disputes and unpleasant feelings have arisen.

Again, independent service men have been criticized for accepting only the cream of the business, turning down calls which did not appear to offer immediate profit. This has antagonized the distributor or dealer, who is under agreement to provide service on machines in his territory.

Where manufacturers have refused to supply repair parts, the private service operators have been forced to adopt other makes of parts to a job, or secure parts by surreptitious methods. Neither plan is very satisfactory.

Deserve Cooperation

Indications are that independent service men are generally conscientious, anxious to do their work well, and deserving of the manufacturers' co-operation. In most cases they have had experience in the service departments of large manufacturers before striking out for themselves.

Service information is being dispensed more readily by machine makers, and independents are fairly well versed in general refrigeration principles, and in the peculiarities of the various machines.

They have recognized the business opportunities in the refrigeration field, and are providing an essential service to the industry by maintaining the field equipment in good working order.

Railroad Refrigeration

THE most effective solution to a common problem is usually found by pooling the ideas of specialists in the interests concerned. Last week Frigidaire engineers got together in Dayton with the subcommittee on electric refrigeration of the Association of Railway Electrical Engineers, to discuss railroad refrigeration.

Air conditioning and dining car refrigeration were considered, as well as various other subjects in which both aggregations are interested.

This type of activity represents a workable approach to joint problems of distinct industries. Railroad executives are realizing that they can improve their service and increase riding comfort by proper application of refrigeration. The refrigeration industry is coming to appreciate the profitable market that exists for equipment for railroad trains.

But neither group has given sufficient thought to the problems involved, from a viewpoint that embraces the needs and limitations of the other. Further cooperation along these lines should provide some valuable information in railroad refrigeration.

GLEANINGS FROM RECENT PERIODICALS

PRODUCTION AND CONSUMPTION

KEEPING production down to demand is to stabilize poverty; but to stabilize prosperity we must tackle the problem the other way around—we must keep demand up to production; in other words, we must increase consumption. One of the fundamentals of sustained prosperity is the making—and selling—of more and more of the so-called luxuries. Men who borrowed money and built factories and hired men and increased payrolls, and proceeded to make motion pictures, automobiles, refrigerators and radios, are not the men who caused this depression. Business fell because it had too few of these men. Business will not recover until it has more of such men.—W. T. Foster, director, Pollak Foundation for Economic Research, N. Y. Times.

FILTERING BEVERAGE WATER

THE FILTERS available for the beverage industry may be considered under three heads (1) Stone, (2) Sand, (3) Paper or Fibre.

Stone filters have been used for many years in the beverage industry. When new they constitute excellent quate cleansing, these filters would be quite ideal; unfortunately filtering devices and yield about 15 gallons per sq. ft. of filtering area per hour. If methods were available for adequately, they clog relatively quickly and the common practice of scraping off the surface, though it facilitates the passage of water, does not remove all of the clogging materials. Bacteria have the property of being able to grow through and breed in the spaces between the stone particles. The stones must therefore be sterilized.

The practice of removing the stone and boiling it is effective but cumbersome, and is accompanied by a high percentage of breakage of stones. Sterilization by chemicals, particularly chlorine, is now being recommended. A concentration of one to two ounces of the standard chlorine solutions, such as B. K., or Antiformin, to four gallons of water, if allowed to act for 30 minutes to an hour will generally be found satisfactory.

The practice of adding a strong chlorine solution and permitting it to act over night is open to the danger of causing serious corrosion to the metal container, in which the stone is held, and its connections.

The pressure sand filter is an adaptation, made to do on a small scale what the gravity sand filter effectively performs for city water supplies. It consists of a body of fine hard quartz sand, supported upon a bed of gravel and stone. For best results the total depth of filter should be about three feet, and not less than two feet (the upper layer) should consist of fine quartz sand. The sand layer must under no circumstances be less than one and a half feet deep.

The rate of filtration is particularly important. This should not be over two gallons per sq. ft. of filtering area per minute if the water is an untreated supply, but if employing a municipal supply which has already been filtered and rendered safe for drinking purposes, a rate of three or possibly four gallons per sq. ft. per minute might be satisfactorily employed.

The slower the rate of filtration, the better the result. In some cases it has been found necessary to reduce the rate of filtration to less than one gallon per sq. ft. per minute in order to obtain the necessary clarity of the water and beverage. It is important that the rate of filtration should be the same throughout the filtering area; automatic control would eliminate overloading.—Abstracted from Paper by Max Levine and J. H. Buchanan, Siebel Technical Review.

COOKING BY ELECTRIC WAVES

COOKING by means of electric waves in a machine which produced a well prepared steak in five minutes without heating it to the point where vitamins are destroyed, as in ordinary methods, has been demonstrated by a Berlin inventor. Apparatus, about the size of a radio cabinet, consists of a high frequency machine and a spirally wound spool of special metal, through which the rays pass. Cooking is done at a temperature of 167 deg. F. Cost of current necessary to prepare a meal is put at about one cent.—New York Times.

Chicagoans Teach Refrigeration

(Concluded from Page 1, Column 3)

in a volume to serve as a reference book.

When a student has finished the lessons, he has the privilege of coming to this city where Walter Hoehne, manager of the placement bureau, will arrange for him to get two weeks of practical experience in a local refrigeration service shop.

Information on "How to Start Your Own Service Station" is given students at the end of this course, so that if they wish, they may organize an independent service company. Another feature of the program is an extra course on "Ventilation—Air Conditioning—Air Cooling Methods," available to graduates.

The instruction is all supervised by John B. Rathbun, chief engineer for the institute, who is assisted by F. P. Seibel, Jr., J. R. Boyle, and C. E. Hamilton.

The lessons and their topics are as follows: 1. The refrigeration industry. 2. Food preservation. 3. Heat and cold. 4. Recognized electric refrigeration principles. 5. Ice and electric refrigeration. 6. Evaporation systems. 7. Compression principles. 8. Absorption refrigeration systems. 9 and 10. Properties of refrigerants.

11. Compressor principles. 12. Compressor power and pressures. 13 and 14. Commercial compressor types. 15. Condensers. 16. Expansion valves, float valves, controls used. 17 and 18. Freezer boxes.

19. Thermostats. 20. Motor drive systems. 21, 22, and 23. Machine layouts. 24. Piping layouts. 25. Piping connections. 26. Practical calculations. 27. Field calculations. 28 and 29. Absorption systems. 30. Miscellaneous systems. 31 and 32. Reading blue prints. 33. Estimating from blue prints. 34. Multiple unit and remote systems. 35. Multiple station systems. 36. Brine circulating systems.

37. Refrigerator construction. 38. Cooler construction. 39 and 40. Installation of refrigerators. 41 and 42. Maintenance and repairs. 43 and 44. Servicing refrigerators. 45. Prime movers of machines. 46. Motor trouble charts. 47. Motor repairs and adjustments. 48. Electric wiring.

Coming Events

Institute of Radio Engineers, annual meeting, June 3 to 6, Chicago. H. P. Westman, 37 W. 39th St., New York City.

National Electric Light Association, convention, June 8 to 12, Atlantic City, N. J. A. Jackson Marshall, 420 Lexington Ave., New York City.

Radio Manufacturers Association, annual convention, June 8 to 12, Chicago. Bond Geddes, 11 W. 42nd St., New York City.

Association of Iron & Steel Electrical Engineers, annual meeting, June 15 to 19, Cleveland. J. F. Kelly, 1007 Empire Bldg., Pittsburgh.

Canadian Electrical Association, annual meeting, June 16 to 18, Banff, Canada. H. W. Lyster, Power Bldg., Montreal, Que.

American Society of Agricultural Engineers, annual meeting, June 22 to 25, Ames, Iowa. Raymond Olney, St. Joseph, Mo.

American Institute of Electrical Engineers, summer convention, June 22 to 26, Asheville, N. C. F. L. Hutchinson, 33 W. 39th St., New York City.

American Society for Testing Materials, annual meeting, June 22 to 26, The Stevens Hotel, Chicago. C. L. Warwick, Engineers' Club Bldg., 1315 Spruce St., Philadelphia.

Camp Cooperation XI, July 27 to 31, Association Island, Henderson Harbor, N. Y. Society for Electrical Development, 420 Lexington Ave., New York City.

FILTRINE COOLERS INSTALLED IN NEW YORK DENTAL CLINIC

NEW YORK CITY—Thirty gallons of water per hour can be drawn from the circulating drinking water system installed in the new million dollar Guggenheim Dental Clinic, devoted to the free treatment of New York children under 12 years of age.

The water temperature is reduced 30° F. by the Filtrine model six cooler, supplying water to the eight floors and 12 fountains in the building, in addition to serving the X-ray developing baths.

One of the features of the installation was the small space allotted for the 40-gallon storage cooling tank, compressor, and circulating pump. The entire equipment was installed in a floor space of 35x30 in.

U. S. NAVY DESTROYERS USING KELVINATOR EQUIPMENT

SAN DIEGO, Calif.—Seven U. S. naval destroyers and transport ships have been equipped with Kelvinator refrigeration, according to C. C. Westbrook of Robertson Bros., Kelvinator dealers here.

The U. S. S. Badger has an R-10 condensing unit, connected to a special direct expansion coil for a deck refrigerator, a model 8 tank in the pantry refrigerator, and a two-hole ice cream cabinet. The U. S. S. Twiggs has the same equipment, and, in addition, a special water cooler.

COURT SAYS DRY ICE PATENT IS INVALID

(Concluded from Page 1, Column 2)

tion without a license, and that the Dry-Ice Corp. would immediately bring such a suit.

The Supreme Court granted the rehearing, limiting the question to the validity of the patent, and a re-argument was ordered. The respondents petitioned for a rehearing on the infringement issue, but it was denied.

The refrigerated transportation package upon which the patent was granted, consists of an outer box or carton in which ice cream or other foodstuff is to be shipped, in the middle of which is a small container with a quantity of solid carbon dioxide.

Placed in this manner, the refrigerant is relatively enduring because it is doubly protected from exterior heat by the ice cream which surrounds it, and the evaporating gas which excludes air and moisture from the carton. The ice cream is kept frozen by both the solid and the gaseous carbon dioxide.

Judge Brandeis' Decision

Justice Brandeis delivered the following opinion of the Supreme Court:

"In our opinion delivered March 9, 1931, we found it unnecessary to determine the validity of the patent, because we held that the bill should be dismissed on the ground that the owner of a patent may not limit its use so as to require that unpatented materials employed in practicing the invention shall be purchased only from the licensor.

"The alleged invention is for the locational arrangement of materials within a container. Whether a locational arrangement within a structure can ever be patented as a manufacture need not be determined. Nor need we consider whether the patent, as issued, contained a sufficient disclosure of the alleged invention. For the combination in suit lacks patentable invention and novelty.

"Each of the elements—refrigerant, material to be refrigerated, and container—performs its function in a known way. Long prior to the date of the claimed invention, it was known that solid carbon dioxide, which has a temperature of 110° below zero, is a refrigerant; that when it "melts," it passes directly into a dry gas heavier than air, of like low temperature, which may serve as a refrigerant until its temperature rises to that of the outside air.

Cites Former Art

"It was known also that a frozen article—be it ice cream or solid carbon dioxide—will remain frozen longer if insulated; and that that paper is an insulator. It was not invention to conclude that a cake of the solid carbon dioxide wrapped in paper would remain solid longer if also surrounded by ice cream, than if placed in more immediate proximity to the walls of the container, and thus to the outer air; or to conclude that the gas, being heavier than air, would, as generated, drive the air out of the container, and thus serve as additional insulator.

"Moreover, the structural device of surrounding the refrigerant by the article to be refrigerated had been shown in the Mosler and Ladewig refrigerated butter-box, U. S. Patent 236,906, and in Rumpel's portable lunch box, U. S. Patent 1,130,932.

"It is true that in these prior art structures, the refrigerated materials were not completely surrounded by the refrigerant employed, as the top or bottom of the ice container was usually left exposed. This was done to permit access to the ice chamber for the purpose of removing water.

"Since carbon dioxide sublimates directly into a dry gas, such access obviously need not be provided, and the refrigerant may be surrounded on all four sides. This difference is unimportant. These references suffice to render the patent invalid also because of anticipation without considering the additional defense of prior use."

ELECTROLUX ADDS 6.5 CU. FT. REFRIGERATOR TO LINE

EVANSVILLE, Ind.—Addition of a new 6.5 cu. ft. gas refrigerator to be known as the Senator model is announced by Electrolux Refrigerator Sales, Inc.

This model is of the single door type, embodying the symmetrical lines of the other 1931 models. The list price is \$310.00 f.o.b. Evansville.

Overall dimensions of the new EA-6.5 are: Height, 62 3/4 in.; depth, 24 1/2 in.; width, 32 1/2 in. The unit is designated as the G-80-1.

Six ice cube trays have a capacity of nine cubes each. There are four food shelves with a net shelf area of 11.53 sq. ft.

KORFUND CO. MOVES PLANT TO NEW LOCATION

NEW YORK CITY—The Korfund Co., Inc., manufacturers of natural cork plate, the Vibro-Damper, and other materials for the isolation of machinery vibration, have recently moved into a new plant located at 48-15 32nd Place, Long Island City, New York.

SERVICE HINTS

By FRANK W. GRAY

When two-temperature snap-action valves are used to coordinate a refrigeration system in which "sharp" temperature cooling units and moderate temperature cooling units are used together, the suction line should not be teed from one cooling unit into the other, but separate suction lines should be run from each cooling unit completely back to the compressor.

Service men occasionally get into difficulties through using sharp and moderate temperature cooling units in a multiple system, with one main suction line and one or more two-temperature valves.

The reason for the difficulty seems to be that when the machine shuts down, the two-temperature valve placed in the suction line leading from the moderate temperature cooling unit continues to open and close because of pressure changes, whereupon the refrigerant which is released pours back along the one suction line into the low temperature cooling unit where it condenses, instead of going back to the idle compressor.

Such a condition would be very apt to prevail in the case of a large refrigerator, demanding a 40° F. temperature, hooked up in multiple with an ice cream cabinet, operating at about 5° F. Then, when the machine starts up again there is a back frost along the suction line due to the surplus refrigerant being pumped back from the low temperature cooling unit.

This condition in a multiple system will also cause a spasmodic variation of temperature in the low temperature cooling unit. If individual suction lines are run, as suggested above, from high and low temperature units, there will be no tendency for the refrigerant to flood back into the low temperature side of the system when the machine is off. Instead it will be forced to return to the compressor.

With this type of hook-up, the two-temperature valve should be installed in the suction line leading from the higher temperature unit, very near to the compressor, thereby cutting down the noise of the valve and making a more positive balance in the system.

Many food merchants use their refrigerators in a dual capacity to store both meats and vegetables therein. Wherever the service man finds a user following this practice, he should impress upon his mind that meat should be kept at 38° F., while vegetables demand a much higher temperature of 50° F.

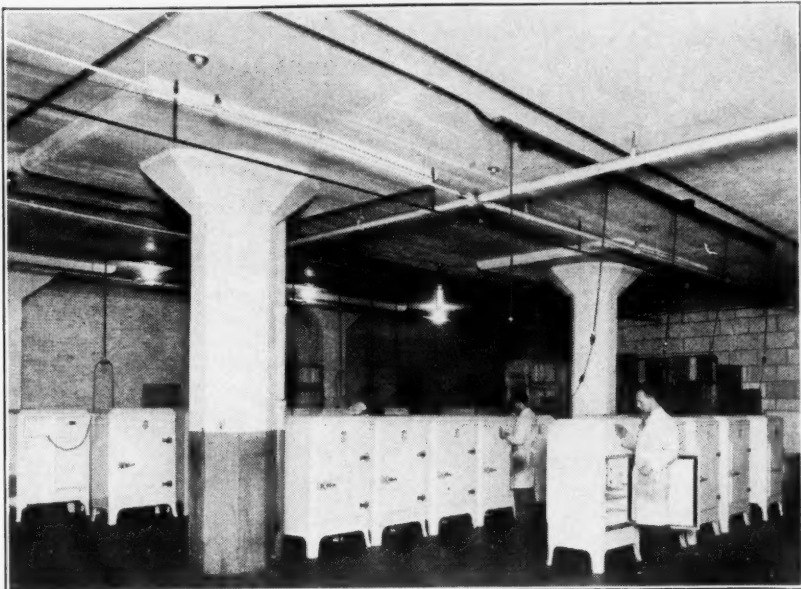
If the service man is awake to his opportunity, he may be able to sell the merchant another refrigeration system to be installed in a fruit and vegetable box. As a matter of fact, a great many merchants suffer a heavy loss in vegetable and fruit spoilage each year, because they have not been awake to the necessity for correct refrigeration for these commodities.

There is a need for a refrigerating unit which can be installed to furnish a moderately cold temperature in candy display counters. In some sections of the country, candy dealers find it impossible to stock chocolate candy during the summer months without a loss from spoilage.

The heat causes the chocolate coating to soften, after which it hardens again with a greyish coloring which makes the candy unsalable. Mild refrigeration in candy counters would prevent this.

The engineer who considers designing such equipment should bear in mind that it must be low in price, must produce a temperature of not lower than 50° F., and must be easily installed in the ordinary single glass candy display counter.

Checking Before Shipping



Five cu. ft. Majestics getting their 48-hour test before delivery by the Peirce-Phelps Co., Majestic distributor in Philadelphia. The refrigerators are delivered to the consumers in a pre-cooled condition.

CHICAGO A. S. T. M. EXHIBITS FEATURE SMALL MACHINES

PHILADELPHIA—Visitors to the testing machinery exhibit of the American Society of Testing Materials which will be held June 22 to 26 in the Stevens Hotel, Chicago, will be shown how small testing machines can be made to determine certain data, officials of the society here point out.

One special hydraulic testing machine will be shown which exerts a pull of only 60 lbs., and was developed to make cross bending tests of flat springs in connection with a study of hydrogen embrittlement. The pressure of the oil chamber is so small that it is measured by a water manometer instead of the usual test gages.

Another machine, designed for fatigue tests on specimens .05 in. in diameter, stands on a base 4 in. x 10 in., is 4 in. high, and weighs less than 10 lbs.

New apparatus for measuring the fire resistance of wood, especially to the spread of flame, will be shown by an A. S. T. M. committee. A specimen of wood is suspended in a long iron tube, and a gas flame applied, using a novel device to measure the loss of weight.

Dr. A. Nadai, who will describe developments regarding the "Phenomenon of Slip in Plastic Materials," will demonstrate the fundamentals of his subject with operation of equipment furnished by the Westinghouse Research Laboratories. Faint traces of plastic flow can be observed by means of this apparatus, and deformed surfaces of metal specimens can be photographed, officials of the society claim.

The Bell Telephone Laboratories will have several special testing machines in their booth, one of which will be a fatigue machine for sheet metals. This was designed to test simultaneously 40 specimens of sheet metal of varying thicknesses, and it is possible by varying the deflection of the reciprocating arms, to vary the intensity of the stress.

KELVINATOR-LOS ANGELES CO. BUILDING WATER COOLERS

LOS ANGELES—The Kelvinator-Los Angeles Co., local distributor of Kelvinator equipment, is manufacturing and marketing new "Better-Built" water coolers, according to an announcement from J. Simon, president of the firm.

GAY ENGINEERING HAS QUICK-FREEZING JOBS

LOS ANGELES—Quick freezing of fish, orange juice, grape juice, and other fruit juices is being accomplished in installations which the Gay Engineering Corp. of this city has made throughout the country.

A plant for quick freezing of fish has been placed in operation for the Union Ice Co. of California, at Wilmington, Cal. This installation uses the pan method of freezing, the pans being placed directly on, and in contact with, metal plates fastened to the direct expansion coils. A dual pressure, low temperature ammonia system is used for the refrigeration, C. E. Kilgore, engineer for the Gay Engineering Corp. states.

A capacity of 5,000 gallons of orange juice a day is secured from the equipment installed in the Goldenhealth Products plant at Long Beach, Cal. Extracting and conveying machinery designed by the Gay company is used in this operation. The juice is first pre-cooled before going to the freezer units.

The peelings and pulp are both saved, and delivered to the by-products department of the plant.

A grape juice freezing plant with a capacity of 30,000 gallons daily is used in the Vita-Fruit Products plants at Lodi, Cal., and fruit juice freezing equipment is now being put into operation for Tom Huston Frozen Foods, Montezuma, Ga.

The instantaneous juice freezing process being installed in the Huston plant utilizes the Gay design extraction units which deliver the juice directly to the freezing surface, where it is instantaneously frozen and subsequently passed through an extrusion machine. From this machine, frozen bars of any desired size or shape emerge, the bar being cut to proper lengths, or placed in containers.

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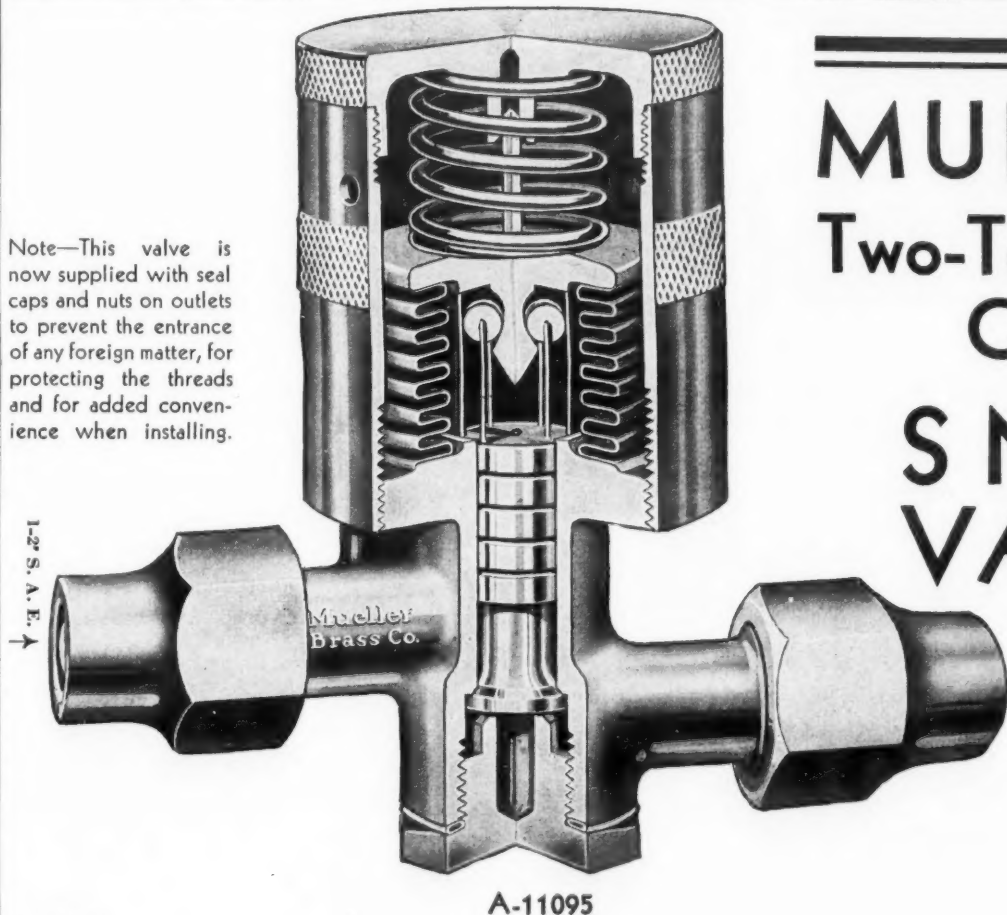
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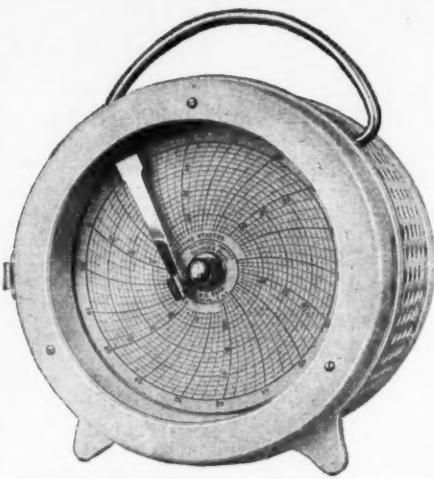
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Service Troubles Traced to Small Sized Suction Lines; Excess Line Voltage; Surplus Capacity of Compressors

By Frank W. Gray

It was at a conference of the owners of a large apartment hotel that the ultimatum was handed down: "Either put your refrigeration system into perfect running order within a period of two weeks, or remove all of your equipment from the premises and prepare to fight a damage suit."

The job in question was a methyl chloride multiple system, installed in an apartment hotel fifteen stories in height, 190 cooling coils in 5 cu. ft. boxes being operated by five 1½ h. p. water-cooled compressors located in a basement room.

The job had been laid out and the tubing installed under the direction of a refrigeration engineer, who had later been dismissed. Thirteen separate risers had been run in conduit up through the walls of this building. The first six stories of the building had walls and floors of solid concrete. Each riser had a vertical run of about 150 ft., while the horizontal runs from the compressor manifolds to the lower extremities of the risers varied from 20 to 60 ft.

When it was time to install the coils it was discovered that the engineer who designed the job had put in steel conduit only 1 in. in diameter, allowing only ¼ in. liquid line tubing and 5/16 in. suction line tubing. Some doubt was felt that suction tubes of this small size were advisable in a building of this height, over 30 coils being operated off each compressor.

But the 1 in. conduit having already been installed in the walls, and for half its length buried in solid concrete, there seemed no feasible way of getting additional suction line capacity into the building. The service men working on

the job had had no experience with buildings of this height, and decided to take a chance on correct operation.

After the system was completed and put into operation, it was found that the coils installed in the boxes on the upper three floors were frosting only spasmodically.

The compressors being water-cooled, and operating with fairly low head pressures, it was first thought that higher head pressures would be necessary to lift the refrigerant to this height. So water supply to the condensers was cut down a trifle to raise the head pressures. Then tests were made at the top of the building to determine whether the freezing coils at the extremities of the risers were getting ample liquid refrigerant. In each case, when the liquid line connections on the coils were "cracked" liquid methyl chloride spurted forth, proving conclusively that the trouble was not due to an insufficiency of liquid refrigerant in the upper coils.

Meantime, tests showed that the suction line pressures at the compressors were very low, sometimes pulling about two in. of vacuum. This indicated that the cause of the trouble was lack of suction line capacity.

Larger Suction Lines Needed

The next problem to be solved was how to increase the size of the suction lines. The conduit was only 1 in. in diameter, and inspection disclosed no practicable way of enlarging the suction lines within the walls of the building. Further investigation, however, disclosed a double roof on the building, there being a four ft. space between the main roof and the rafters ceilings of the rooms on the fifteenth floor. This extra space proved to be a life-saver.

A cast iron standpipe, large enough to hold 13 lengths of ½-in. suction line tubing, was run 150 ft. up the light well of the building, the men being lowered down in bosun's seats to make the installation. These auxiliary suction lines were manifolded into the compressors in the basement and branched out of the top of the standpipe which ran up the light well into the space beneath the roof. There they were connected to the upper extremities of each of the 13 risers.

By this method of installation the vaporized refrigerant was pumped out of the top of the risers and down the outside of the building through the auxiliary suction lines, as well as being drawn down through the walls of the building by the 5/16-in. suction lines which had been previously installed.

Within a few hours after this repair job had been completed, the suction line pressures at the compressors had built up to the point required for the correct operation of methyl chloride systems, the compressors were cutting in and out on regular cycles, all of the coils in the building were fully chilled, and no further trouble was experienced with the job.

The cost of running the pipe with additional suction lines up the light well of the building was something over \$400, but inasmuch as the price of the job was over \$10,000, and various reputations were at stake, the extra expense was justified.

The Mysterious Compressor

A restaurant job installed with a multiple system consisting of a water cooler and two medium-sized wall boxes hooked up to a 1 h. p. water-cooled compressor, was giving trouble. When the installation had been completed according to standard and proven methods, a service call came from this job every morning about eight o'clock. When the service men got there, they found each time that the electrical safety switch had automatically cut off the compressor some time during the night.

It was then thought that there must be a partial failure in the water supply to the water-cooled compressor, or a partial stoppage in the water waste outlet from the condenser, which caused head pressure to build up. But an in-

spection of the water pipes and sewer connections proved this to be hardly probable.

So a service man was delegated to sit up all night with the job in order to make tests at the time of cutting out. When the compressor shut down, as usual, he tested the electric power line with an ammeter and found that the current flow, for some unaccountable reason, had suddenly increased beyond the capacity of the fuses in the electrical safety switch.

The explanation of an electrical engineer was that at this late hour every night many of the large hotels and business buildings in the metropolitan district surrounding this restaurant turned off their lights at this early morning hour, throwing a surplus of voltage on the wires. We were never quite satisfied with this explanation, but for want of a better one, installed larger fuses in the safety switch, and no further trouble was experienced with this machine.

Apartment Job Sweats

The owner of the apartment house was an opinionated old gentleman of German extraction. Upon looking over the specifications for a methyl chloride multiple installation in his 28-apartment building, he declared that one compressor—whatever capacity it might be—was not enough for him. He must have at least two compressors in order to be assured of ample refrigeration.

In accordance with his instructions, the plans were changed to include two 1 h. p. water-cooled compressors, instead of the one 1½ h. p. unit originally specified. Under these conditions, each compressor was connected up to 14 small apartment house freezing coils to be installed in the four cu. ft. boxes.

When the installation was completed and the system in operation, it was found that an annoying drip from the main liquid and suction lines running along the ceiling of the basement hall, and from the risers which for the most part were concealed within the walls, was discoloring the plaster and staining the floors. There was no frost on the tubing—merely beads of moisture, which seemed to come from no one place in particular.

The service men were called out to the job. They first diagnosed the trouble as caused by a leaking needle valve somewhere in the system. The risers being fairly well concealed, it was thought that a back frost from one or more of the boilers was being carried down the lines of tubing, dripping between cycles of operation. Accordingly, every freezing coil was carefully tested and inspected, and several suspicious ones were replaced. This did not, however, remedy the trouble.

Enough Refrigerant, No Leaks

The service men then assumed that the system was short of refrigerant, and that the "sweating" might be coming from the high side. The liquid and suction lines being strapped together, a chilling of either run of tubing would be communicated to the other. So the entire system was tested for leaks, and additional refrigerant added as a precaution.

Meantime the sweating continued—never a frost, but simply a condensing of moisture on the tubes, which caused a slow, intermittent drip.

Finally one of the compressors was disconnected, and the entire system of 28 freezing coils was hooked up to the other. The chilling immediately stopped, there was no more dripping of the lines, and operation was perfect. It was very evident in this case that a surplus of compressor capacity was pumping the refrigerant back from the freezing coils so rapidly that a full vaporization had not taken place, and a chilled suction line had been the result, with this annoying drip.

The fact that the German apartment house owner insisted upon having his other compressor hooked back into the system is another story. Suffice to say, when the cause of the trouble had been found it was a simple matter to reduce the capacity of the compressors by putting on smaller motor pulleys, which operated them at a slower speed, so that even with two compressors operating no further trouble was experienced with the job.

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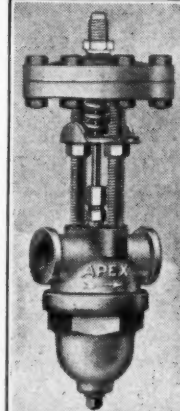
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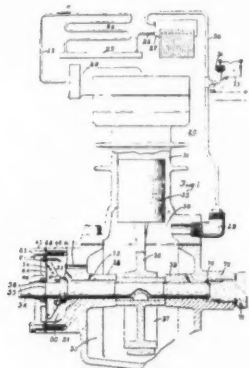
LATEST REFRIGERATION PATENTS

ISSUED MAY 5

1,803,318. ABSORPTION MACHINE. Edmund Altenkirch, Neuenhagen, near Berlin. Werke Aktiengesellschaft, Berlin-Siemensstadt, Germany, a Corporation of Germany. Filed Apr. 6, 1929. Serial No. 353,073, and in Germany Apr. 10, 1928. 7 Claims. (Cl. 62-119.5.)

1. An absorption machine, having two bodies of absorption solution each consisting of a binary mixture of a liquid solvent and a gaseous working medium, a generator for expelling working medium from the absorption solution, a reabsorber for the absorption of working medium into the absorption solution, an evaporator for evaporating the working medium out of the absorption solution, an absorber for absorbing working medium into the absorption solution, a pipe for leading gaseous working medium from said generator to said reabsorber, a pipe for leading gaseous working medium from said evaporator to said absorber, a pipe for returning strong absorption solution from said absorber into said generator, a pipe for leading strong absorption solution from said reabsorber into said evaporator, a pipe for returning weak absorption solution from said evaporator into said reabsorber, means for effecting a circulation of one body of absorption solution through said generator and said absorber, means for effecting a circulation of the other body of absorption solution through said evaporator and said reabsorber, the quantity of the liquid of the body circulating through said generator and said absorber being larger than the quantity of the liquid of the body circulating through said evaporator and said reabsorber.

1,803,510. SEAL FOR REFRIGERATING APPARATUS. Warren H. F. Schmieding and Jesse G. King, Dayton, Ohio, assignors to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Apr. 30, 1928. Serial No. 274,033. 4 Claims. (Cl. 286-11.)



1,803,510

1. In a refrigerating apparatus wherein refrigerant is circulated under varying pressures, a casing, a shaft passing through said casing, a shoulder on said casing surrounding said shaft and forming a cavity subject to pressures within said apparatus, a radial bearing surface on said shaft, an end plate on said shoulder, a diaphragm hermetically connected to said end plate at an effective pressure distance from the axis of said shaft substantially equal to said bearing surface, a rigid ring provided to co-operate with said first-named bearing surface, said ring and diaphragm being hermetically connected radially beyond said bearing surfaces and a ring with radial, axially resilient fingers for maintaining said bearing surfaces together.

1,803,639. REFRIGERATING APPARATUS. Aurin E. Payson and Miner P. Wetmore, Norwich, Conn. Filed Sept. 21, 1928. Serial No. 307,348. 18 Claims. (Cl. 62-91.5.)

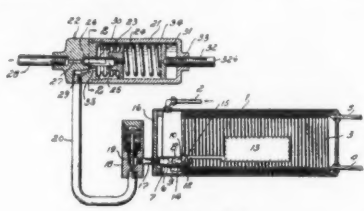
1. In refrigerating apparatus, a heat-insulated jar having an inner transverse partition removably supported by the side walls

of the jar below the top and above the bottom thereof, so that the space below said partition constitutes a chamber for holding a refrigerant, the space above said partition constituting a freezing chamber larger than said lower chamber, said partition also serving as a support for a container in said freezing chamber.

1,803,640. FREEZING APPARATUS. Leroy S. Pfouts, deceased, Canton, Ohio, by Joan S. Pfouts administratrix, Canton, Ohio, assignor to the H. H. Miller Industries Company, Canton, Ohio, a Corporation of Ohio. Original application filed Jan. 21, 1928. Serial No. 248,543. Divided and this application filed Aug. 9, 1928. Serial No. 298,452. 3 Claims. (Cl. 62-114.)

1. In apparatus of the class described, the combination of a support, a container for material mounted thereon and comprising a cylinder disposed vertically and having heads closing its upper and lower ends, said lower head being formed with a relatively large opening and a relatively small opening, and a valve element for controlling the discharge of material through the relatively large opening and having a portion to control the discharge of material through said relatively small opening independently of the discharge of material through the large opening.

1,803,677. VALVE CONTROLLING MECHANISM FOR REFRIGERATING SYSTEMS. Walter G. E. Roloff, St. Louis, Mo. Filed Aug. 13, 1929. Serial No. 129,038. 8 Claims. (Cl. 62-8.)



1,803,677

2. In a refrigerating system, in combination with a receiver for liquid refrigerant connected with the low side of the system, a float valve for controlling the flow of refrigerant from the receiver, and a valve interposed in the line between said receiver and the low pressure side of the system and normally held closed by a predetermined pressure exerted on one side and adapted to be opened by a greater pressure by the liquid refrigerant from said receiver exerted on the other side.

1,803,734. ICE-FREEZING RECEPTACLE. WALL. Frank G. Sherer, Los Angeles, Calif., assignor to Refrigerator Grid Co., Chicago, Ill., a Corporation of Illinois. Filed Mar. 11, 1929. Serial No. 345,905. 9 Claims. (Cl. 62-111.)

4. A removable ice grid comprising a plurality of vertically disposed crossing members, each having a vertically extending hollow space therein open at one edge of the member.

1,803,760. OVERHEAD BULKHEAD DROP GATE FOR BOX AND REFRIGERATOR CARS. George F. Jones, Dallas, Tex. Filed Oct. 11, 1929. Serial No. 398,930. 3 Claims. (Cl. 105-376.)

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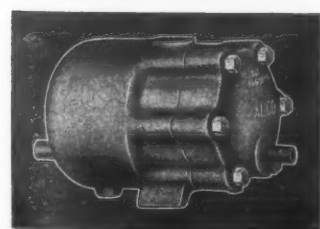
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1. Small—The Alco Type H float valve occupies little space—actual dimensions being: length 9 1/2 in.—height 6 in.—width 5 1/2 in.
2. Inexpensive—The High Pressure float valve is low in first cost and low in maintenance on account of its extreme simplicity.
3. Patented feature eliminates gas binding—The valve contains a vent-tube which prevents non-condensable gases collecting in the valve chamber.
4. Can be located anywhere—The use of the vent makes possible the installation of valve at any height with respect to receiver and low side. It need not be placed below receiver.
5. Eliminates long runs of insulated pipe between valve and low side—By installing the valve on top of the cooler, or close to it, the length of insulated pipe between the valve and low side is reduced to a minimum.
6. Valves available for capacity up to 25 tons—The port opening of the standard High Pressure Float Valve is sufficiently large to satisfactorily handle loads up to 10 tons of refrigeration. For larger loads, up to 25 tons, the port size can be increased at a very slight additional cost.

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Eastern Office:
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Manufacturers of constant pressure expansion valves, Thermo valves, high pressure float valves, liquid magnetic stop valves, and suction line stop valves.

1,804,065. VALVE. Norman M. Small, Waynesboro, Pa., assignor to Frick Company, Waynesboro, Pa., a Corporation of Pennsylvania. Filed June 21, 1928. Serial No. 287,284. 3 Claims. (Cl. 230-221.)

1. A valved piston comprising a piston head having a series of axial perforations therein, a valve having a series of axial perforations arranged in a circle of larger diameter than the perforations in the piston head, an annular depending ridge on said valve between the perforations in the valve and those in the piston head, and means for securing the valve upon the piston to allow a slight axial movement of the valve with respect to the piston substantially as set forth.

1,804,079. AIR CONDITIONING APPARATUS. Frederic F. Bahnsen, Winston-Salem, N. C., assignor to The Bahnsen Company, Winston-Salem, N. C., a Corporation of North Carolina. Filed Oct. 13, 1928. Serial No. 312,287. 17 Claims. (Cl. 236-44.)

1. In air conditioning apparatus, the combination with a plurality of humidifying units and means for supplying water thereto, each of said units provided with a humidity-responsive member for controlling its individual water supply, and means responsive to temperature changes in the air conditioned by said units for regulating the rate at which water is supplied to said units, of a master control apparatus for controlling the supply of water to all of said units, of a master control apparatus for individual control members and said temperature responsive member.

1,804,085. CONTAINER. Arthur H. Borden, North Dartmouth, Mass. Filed Apr. 16, 1929. Serial No. 355,548. 2 Claims. (Cl. 62-91.5.)

1. In a container of the class described, a bottom wall provided with internal corrugations, a refrigerant container positioned within said container, said refrigerant container being provided with protuberance on its upper and lower surfaces, and a package mounted within said container and resting on said corrugations.

1,804,219. REFRIGERATOR CAR. George A. Hull, Chicago, Ill., assignor to Equipment Specialties Co., Chicago, Ill., a Corporation of Illinois. Filed Dec. 5, 1927. Serial No. 237,638. 15 Claims. (Cl. 105-422.)

1. In a refrigerator car, the combination of a supporting frame with a layer of heat insulating material carried by said frame, a waterproof layer supported above said insulating material, channeled guides carried by said supporting frame, and a plurality of sections of flooring in said guides, said sections comprising a plurality of strips of lumber secured together at their edges.

2. In a refrigerator car floor, the combination of a plurality of strips of flooring with a pair of channeled guide members for supporting said flooring, a supporting frame for said car, and upwardly extending metal straps on said channeled members for securing the same to said car frame.

1,804,220. ICE MANUFACTURING APPARATUS. George Lange, New York, N. Y., assignor to American Ice Company, Jersey City, N. J., a Corporation of New Jersey. Filed Aug. 10, 1928. Serial No. 298,784. 8 Claims. (Cl. 62-159.)

1. In apparatus of the class described the combination with a plurality of cans and

(Continued on Page 10, Column 2)

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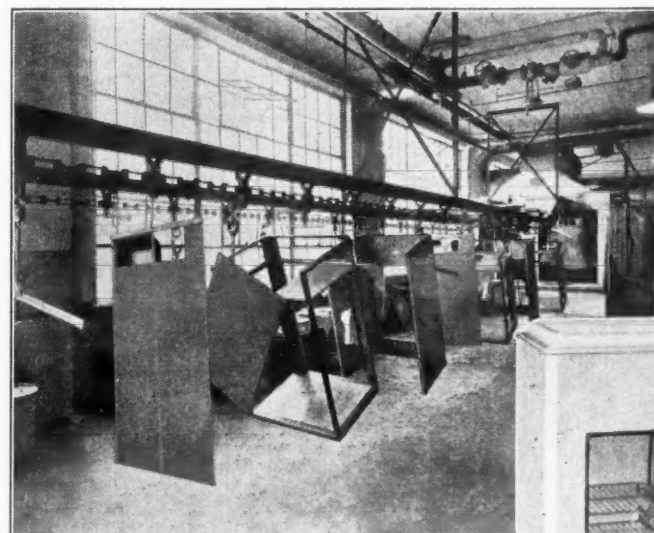
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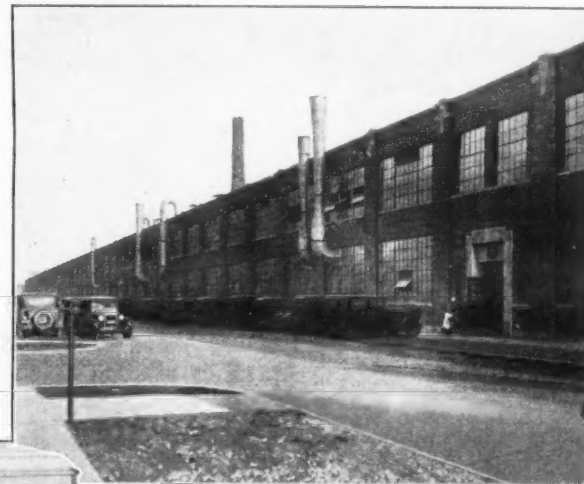
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View of the Cabinet Plant, 1025 feet long, in which the Grigsby-Grunow Company builds Majestic Refrigerators. The total area of floor space of this marvelous new factory is 15 acres.

portion of the wet finish, anchoring it permanently upon drying.

When the enamel is applied over Bonderite there is no tendency to crack, flake or peel.

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The Bonderizing operation involves small expense and no skilled labor.

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BEFORE starting to build their popular Majestic refrigerator in 1930, Grigsby-Grunow conducted a nationwide survey to determine features of greatest appeal.

Ten thousand housewives, representing every section of the country, were interviewed. And today's "Mighty Monarch of the Arctic" embodies the most frequently stressed demands.

"A cabinet finish that will stay white and clean" was one of the most recurrent. Accordingly Grigsby-Grunow searched for a metal finishing method that would fulfill the stated requirements and at the same time fit in with mass production schedules.

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steel." Under this process, before finishing coats are applied to an iron or steel product or part, the metal is given a ten-minute dip in a tank of Bonderite solution.

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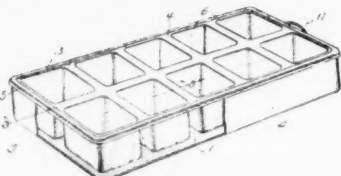
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LATEST PATENTS ISSUED IN FIELD OF

(Continued from Page 9, Column 4)

means for supporting the cans in a row, of a header mounted for back and forth rotation above the row of cans, drop pipes, flexible connections between said pipes and the header for yieldingly oscillating the pipes with the header, one of said pipes being supported within each can, means for actuating the header, and means for supplying air under low pressure to the header.

1,804,324. ICE CUBE PAN FOR REFRIGERATORS. Andre G. DeWeal, Chicago, Ill. Filed May 16, 1929. Serial No. 363,498. 5 Claims. (Cl. 62-108.5.)



1,804,324

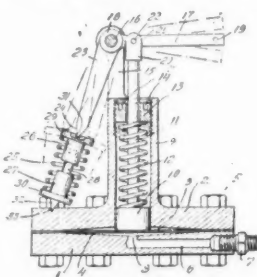
1. A water freezing utensil for use in a refrigerator, comprising a pan member, and a form member including a peripheral flange seated upon and hooked over the said upper edge to support and center the form member on the pan; the form member having a plurality of depending and cup-like formations arranged in rows and freely spaced both from each other and from the pan.

ISSUED MAY 12

1,804,432. PROCESS OF FRACTIONATING, COOLING, AND CONDENSING GAS MIXTURES. Franz Pollitzer, Solin, by Munich, Germany. Filed May 10, 1924. Serial No. 712,452, and in Germany May 31, 1923. 5 Claims. (Cl. 183-115.)

2. A method of cooling gaseous mixtures containing carbon-dioxide below the solidification temperature of the latter, consisting in adding to this mixture hydrocarbons, compressing the mixture, cooling the gas and choosing the total pressure so as to cause the hydrocarbons of the gaseous mixture to liquefy in the same range of temperatures in which the carbon-dioxide, at its partial pressure in the gaseous mixture, might solidify, using the liquid hydrocarbons as a solvent for the carbon-dioxide and preventing thus the solidification of the latter.

1,804,599. PRESSURE OPERATED CONTROL MECHANISM. Walter L. Edel, New Haven, Conn., assignor, by mesne assignments, to Frigidaire Corp., a Corporation of



1,804,599

Delaware. Filed May 19, 1927. Serial No. 192,775. 3 Claims. (Cl. 137-156.)

1. A pressure operated control mechanism

comprising a casing, a diaphragm mounted in the casing, means permitting pressure to be exerted on one side of the diaphragm, a spring pressed rod engaging the other side of the diaphragm, a pivotally mounted control arm connected to said rod and adapted to be connected to a member to be operated, a second arm fixed to said control arm and arranged at an angle thereto, a spring operatively associated with the end of the second arm, and a pivoted support for said spring, said control arm moving as a unit with the diaphragm, rod and second arm to produce a "snap" action.

1,804,624. REFRIGERATING APPARATUS. Jesse G. King, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed July 31, 1928. Serial No. 296,475. 6 Claims. (Cl. 257-28.)

1. A refrigerant container comprising in combination a pair of sheets forming a double wall, and a boss secured to one sheet and passing through an opening in the other sheet, the opening being larger than the boss to permit relative displacement of the sheets in the direction of their surfaces.

1,804,649. APPARATUS FOR CONDITIONING AIR. Clinton F. Shadle, Indianapolis, Ind., assignor to Air Development Co., Inc., a Corporation of New York. Filed Feb. 11, 1929. Serial No. 339,056. 7 Claims. (Cl. 183-32.)

2. An air conditioner of the character described including an elongated tank through which air is adapted to pass, a plurality of tubes extending across said tank in communication with the exterior thereof, a plurality of zig-zag baffle plates mounted on the sides of said tubes for directing the air in a sinuous path past said tubes, hook shaped baffles mounted on said plates, and means mounted exteriorly of said tank in position to cause a cooling medium to pass through said tubes from one side of the tank to the other, said tubes being so positioned within said tank as to cool the air passing therethrough.

1,804,653. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Dec. 31, 1929. Serial No. 417,703. 10 Claims. (Cl. 62-95.)

4. In refrigerating apparatus wherein is utilized a working fluid comprising a refrigerant and a liquid separable by gravity, the combination of an evaporator, means for supplying said liquid and liquid refrigerant to and for withdrawing gaseous refrigerant from said evaporator, and means responsive to pressure due to changes in temperature of said evaporator, said last named means cooperating with said vapor withdrawing means during a part only of the operation of the withdrawing means for returning liquid to said withdrawing means.

1,804,654. REFRIGERATING APPARATUS. Otto M. Summers, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a Corporation of Delaware. Filed Dec. 31, 1929. Serial No. 417,705. 6 Claims. (Cl. 62-126.)

3. In refrigerating apparatus utilizing as a working fluid a refrigerant and a lubricant which separate by gravity, means for maintaining a substantially constant quantity of liquid refrigerant in the evaporator, means for removing by gravity the lubricant collecting on the surface of the liquid refrigerant in the evaporator, said means in-

cluding a valve disposed at the lubricant level desired to be maintained in the evaporator, and means responsive to conditions within said evaporator for operating said valve.

1,804,774. PICKLING TANK CONSTRUCTION. Edwin B. Hudson, Butler, Pa., assignor to The American Rolling Mill Co., Middletown, Ohio, a Corporation of Ohio. Filed Sept. 18, 1928. Serial No. 306,638. 12 Claims. (Cl. 72-14.)

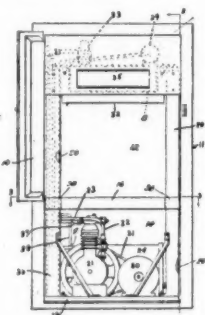
1,804,800. CONTINUOUS PICKLING MACHINE. Charles B. Palmer, Van Nuys, Calif., and Kristian Kronborg, Middletown, Ohio, assignors to The American Rolling Mill Co., Middletown, Ohio, a Corporation of Ohio. Original application filed Nov. 9, 1926. Serial No. 147,311. Divided and this application filed Mar. 30, 1929. Serial No. 351,273. 5 Claims. (Cl. 198-177.)

5. In a conveyor device for a continuous sheet metal pickler, carriers each having a plurality of depending arms with forwardly turned-up lower ends forming sheet-supporting abutments, said arms shaped to support a sheet in an upright position tilted backward at an angle to the vertical and carried in advance of said arms, whereby said sheet may be carried on said arms through a tank of pickle liquor, conveying means to engage and move said carriers, and sheet delivery means, operative between said arms, to raise the lower edge of said sheet above said abutments during the continuous motion of said carrier, and then move said lower edge more rapidly ahead in the direction of travel of said carrier to cause said sheet to leave said arms and fall flat on said sheet delivery means.

1,804,836. SCRUBBER FOR REFRIGERATING APPARATUS. Hubert R. Loranger, Highland Park, and Ubald R. Loranger, Detroit, Mich.; Marie F. Loranger executrix of said Ubald R. Loranger, deceased; assignors to Automatic Freezer Corp., Detroit, Mich., a Corporation of Michigan. Filed June 16, 1924. Serial No. 720,446. 7 Claims. (Cl. 62-115.)

1. The combination with a refrigerating system using a medium adapted to be liquefied and having acid forming properties, of a scrubber located in a position in said system where said medium is in the liquid state, said scrubber containing a substance for removing acid impurities carried by said medium.

1,804,845. REFRIGERATING MECHANISM SUPPORT AND CABINET THEREFOR. Maxwell H. Spreen, Detroit, Mich.



1,804,845

Filed June 16, 1927. Serial No. 199,213. 8 Claims. (Cl. 62-116.)

1. A self contained mechanical refrigerator unit comprising a cabinet having a refrigerated compartment and a refrigerating mechanism compartment, mechanical refrigerating apparatus comprising refrigerant expansion means adapted to be disposed in

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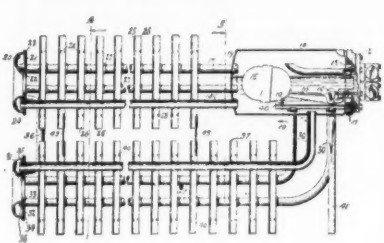
said refrigerated compartment and refrigerant compressing mechanism adapted to be disposed in said mechanism compartment, a frame independent of said cabinet comprising a base on which said refrigerant compressing mechanism is assembled and uprights unitary with said base on which said refrigerating apparatus is assembled, all as a unit, said cabinet and said frame being so constructed and arranged as to permit said frame to be then inserted into said cabinet with said apparatus thereon.

1,804,914. COMBINATION REFRIGERATOR AND SHOW CASE. Philip H. Christopher, Fairmont, W. Va. Filed Mar. 25, 1929. Serial No. 349,667. 3 Claims. (Cl. 62-37.)

1. In a refrigerator show case of the class described, a refrigerating compartment, a food compartment having communication with the refrigerating compartment, the rear side of each compartment being provided with a doorway, a door therefor, a plurality of spaced rollers arranged horizontally in the bottom of the refrigerating compartment, and a refrigerant container mounted for movement into and out of the refrigerating compartment through the doorway on said rollers.

1,805,059. HUMIDIFIER. William G. Wagenhals, Detroit, Mich. Filed April 28, 1930. Serial No. 447,950. 2 Claims. (Cl. 261-104.)

1,805,152. VAPORIZER FOR REFRIGERATOR SYSTEMS. Franklin G. Slagel, Buffalo, N. Y., assignor to Fedders Mfg. Co., Inc., Buffalo, N. Y., a Corporation of New York. Filed April 1, 1929. Serial No. 351,482. 4 Claims. (Cl. 62-95.)



1,805,152

2. A vaporizer for refrigerator systems, comprising a vaporizing chamber, and a plurality of sets or clusters of vaporizing tubes, one set being straight and connected at one end with an end of said chamber, and the other set being of elbow form and having parts thereof parallel with the first mentioned set and other parts at right angles thereto and connected with the side of said chamber, a manifold connecting the rear ends of the tubes of each set, and pipes connecting said manifolds.

1,805,277. CASING STRUCTURE FOR ELECTRICAL APPLIANCES. Paul K. Cramblett, Elkhart, Ind., assignor, by mesne assignments, to Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., a Corporation of Delaware. Filed Mar. 5, 1930. Serial No. 433,312. 4 Claims. (Cl. 200-152.)

1. A mercury switch comprising an outer envelope of lead glass, electrodes sealed therein, a body of mercury in the envelope cooperating with the electrodes, and a sealing tip constituted of lime glass and fused to the lead glass of the outer case.

1,805,293. ABSORPTION REFRIGERATING APPARATUS. Carl Georg Munter, Stockholm, Sweden, assignor to Electrolux Servel Corp., New York, N. Y., a Corporation of Delaware. Filed Mar. 27, 1929. Serial No. 350,150, and in Germany April 12, 1928. 8 Claims. (Cl. 62-119.5.)

1. That improvement in the art of refrigeration through the agency of an absorption system including an absorber, a circulating chamber and a generator which comprises flowing strong absorption liquid from the absorber to the circulating chamber, heating the liquid to vaporize a portion of the refrigerant from solution therein, conveying the resulting vapor and remaining liquid through separate conduits to a cooler point outside said chamber, raising the liquid by the vapor due to thermo-siphon action to a level above the absorber, heating the liquid to vaporize further refrigerant and flowing the remaining liquid to the absorber.

1,805,400. REFRIGERATION APPARATUS. Moritz Hirsch, Frankfurt-on-the-Main, Germany. Filed May 15, 1928. Serial No. 277,900, and in Germany, May 12, 1927. 3 Claims. (Cl. 62-115.)

1. A refrigerating plant having an evaporator for refrigerating a material, a condenser, an auxiliary condenser, a compressor for said condenser, a compressor for said auxiliary condenser, said compressors being connected in series, the suction side of one of them being connected to said evaporator, its delivery side being connected with said condenser, the suction side of the other compressor being connected with the delivery side of the condenser.

(Concluded on Opposite Page)

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MECHANICAL REFRIGERATION

(Concluded from Opposite Page)

ery side of the first compressor and its delivery side being connected with said auxiliary condenser, and means for supplying the refrigerated material to one of said condensers.

ISSUED MAY 19

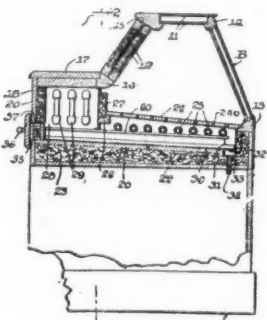
1,805,493. REFRIGERATING APPARATUS AND METHOD. James W. Martin, Jr., Yonkers, N. Y., assignor, by mesne assignments, to Dryice Equipment Corp., New York, N. Y., a Corporation of Delaware. Filed May 26, 1928. Serial No. 280,740. 6 Claims. (Cl. 62-91.5.)

1. The method of automatically controlling the refrigerating effect of solidified carbon dioxide for a range of temperatures above the freezing point of freezable products to be refrigerated thereby, which method includes enclosing the solidified carbon dioxide in an insulating container in heat exchange relation with the upper portions only of a body of liquid having a desired freezing point not lower than the freezing point of the material to be refrigerated and which automatically reverses its thermo convection circulation so that the warmer liquid flows downward at a temperature substantially above the freezing point of said liquid, thereby freezing a layer of ice variably insulating the solidified carbon dioxide to compensate for variations in temperature of the unfrozen part of the liquid; and utilizing the low level portion of said body of liquid as a heat transfer medium for refrigerating the freezable product.

1,805,526. EVAPORATOR. Carl E. L. Lipman, Chicago, Ill., assignor to Lipman Patents Corp., Chicago, Ill., a Corporation of Delaware. Filed May 3, 1930. Serial No. 449,377. 14 Claims. (Cl. 62-95.)

4. An evaporator comprising a plurality of spaced shells formed to provide a plurality of spaced concentric refrigerating chambers therebetween, said chambers being in communication with each other, a liquid refrigerant supply to one of said chambers and a suction connection to another of said chambers.

1,805,563. REFRIGERATED DISPLAY COUNTER. Joseph Blazek, Chicago, Ill., Filed May 25, 1928. Serial No. 280,478. 4 Claims. (Cl. 62-89.5.)



1,805,563

1. In a display counter, the combination of a display compartment provided with an apertured floor, cooling coils located below the apertured floor, the coil sections being in spaced relation to one another, and a removable drawer pan located below the cooling coils and positioned to catch and retain scraps of material falling between the coils, said drawer pan being removable through an opening at the rear of the counter.

1,805,613. REFRIGERATING APPARATUS. George J. Cooke, Chicago, Ill., Filed May 11, 1929. Serial No. 362,399. 3 Claims. (Cl. 62-115.)

1. In an ammonia refrigeration system, an expansion coil, condensing means including a condenser coil, a block tin pipe supply or liquid line connecting said condenser coil and said expansion coil, and a block tin pipe return line connecting said expansion coil and said condensing means, said block tin pipe supply and return lines having relatively thin side walls and being no greater than five-eighths of an inch in diameter.

1,805,656. REFRIGERATION. Bo Karl George Ehnborn, Stockholm, Sweden, assignor to Electrolux Servel Corp., New York, N. Y., a Corporation of Delaware. Filed Oct. 15, 1928. Serial No. 312,624, and in Germany, Jan. 6, 1928. Renewed Sept. 29, 1930. 22 Claims. (Cl. 62-119.5.)

1. In a refrigerating system comprising interconnected vessels including a generator, a condenser, an evaporator and an absorber, said evaporator and absorber being interconnected to form a cycle for circulation of an auxiliary agent in the presence of which a cooling agent evaporates

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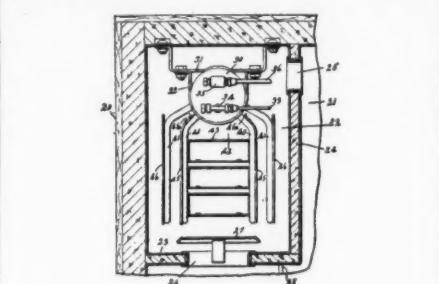
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and plates within the said cycle of the system for providing gas and liquid contact surface, the combination therewith of wire screening under said plates and adjacent thereto for holding capillary films of liquid on the under-sides of the plates.

7. A vessel suitable for use in a refrigeration system comprising a plurality of superposed plates having parts adapted to permit formation of pools of liquid on said plates and wire screening under said plates and adjacent thereto for holding capillary films of liquid on the undersides of the plates.



1,805,684

5. A cooling unit for mechanical refrigerators comprising an elongated header, and a plurality of conduits depending from the header, certain of which cooperate with the header to enclose a freezing space, and certain others being U-shaped loops arranged in downwardly extending rows, each row containing both branches of certain loops, said last mentioned loops being spaced from the freezing space and substantially entirely subjected to air circulating adjacent the cooling unit.

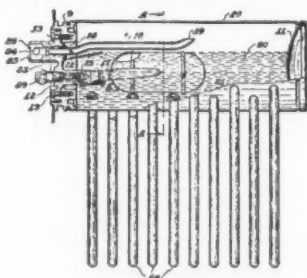
1,805,700. REFRIGERATING APPARATUS. Jesse G. King, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corp., a Corporation of Delaware. Filed Oct. 23, 1923. Serial No. 670,357. Renewed May 2, 1928. 3 Claims. (Cl. 62-4.)

3. A system having a low pressure side and a high pressure side, means for circulating refrigerant through said system, said low pressure side including an evaporator having a plurality of refrigerant ducts and having a supply reservoir for said ducts, said supply reservoir being directly connected with the high pressure side, a float actuated valve responsive to the quantity of refrigerant within the reservoir for controlling the flow of refrigerant from the high pressure side to the reservoir, and adjustable control means for the circulating means responsive to the pressure within said low pressure side, for varying the upper and lower temperature limits of the evaporator independently of one another.

1,805,701. REFRIGERATING APPARATUS. Jesse G. King, Dayton, Ohio, assignor, by mesne assignments to Frigidaire Corp., a Corporation of Delaware. Filed July 22, 1926. Serial No. 124,160. 4 Claims. (Cl. 236-28.)

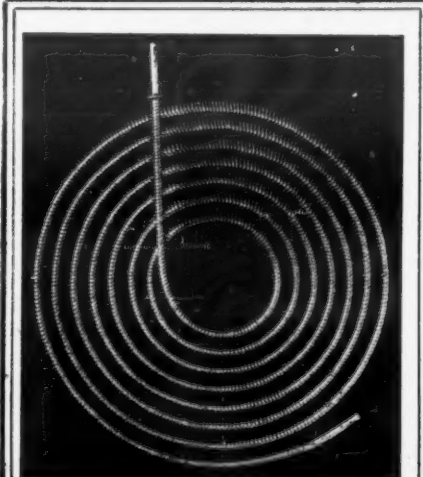
1. A controller for a refrigerating system comprising in combination an operating member responsive to conditions in the system, and a resistance member for said operating member comprising an adjustable casting, a plurality of spring members inside the casting adapted to resist the movement of said operating member in one direction, the adjustment of said casting determining the number of spring members

1,805,762. EVAPORATOR. Don G. Ellis,



1,805,762

Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich., a Corporation of Michigan.



Specify

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ROME, N. Y.

Filed Mar. 21, 1928. Serial No. 263,563. 3 Claims. (Cl. 62-126.)

3. In a mechanical refrigerating system an evaporator having a removable head provided with refrigerant inlet and outlet openings, means for maintaining a relatively constant level of liquid refrigerant therein, and a removable outlet tube projecting into the evaporator through the outlet opening, said tube having an opening therein remote from the removable head and in a plane above the level of the liquid refrigerant.

1,805,755. REFRIGERATED FOOD CABINET. John R. Replogle, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich., a Corporation of Michigan. Original applications filed Aug. 25, 1924. Serial No. 733,913. Divided and this application filed Feb. 18, 1928. Serial No. 255,244. 3 Claims. (Cl. 248-16.)

1,805,787. MECHANICAL REFRIGERATION. Charles C. Spreen, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich., a Corporation of Michigan. Filed Feb. 21, 1927. Serial No. 169,764. 3 Claims. (Cl. 62-95.)

2. In refrigerating apparatus, a refrigerant expansion unit comprising a drum, separate depending pipe loops arranged in rows on each side of said drum, said pipe loops being in open communication with said drum, and separate heat transfer means thermally associated with the loops in each of said rows.

1,805,809. COOLING APPARATUS. Fred John Day, Los Angeles, Calif. Filed April 1, 1929. Serial No. 351,584. 2 Claims. (Cl. 62-24.)

1,805,901. REFRIGERATION. John G. Bergdoll, York, Pa., assignor to York Ice Machinery Corp., York, Pa., a Corporation of Delaware. Filed Nov. 19, 1929. Serial No. 408,363. 8 Claims. (Cl. 62-126.)

1. The combination with an evaporator, of means for maintaining a substantially constant liquid level therein, comprising a liquid containing manometer; a valve controlling the supply of liquid refrigerant to the evaporator; operating means for said valve responsive to the height of the liquid in said manometer; a pressure transmitting connection between said manometer and a point within the evaporator below the liquid level therein; and means for developing in said connection a vapor pressure at least equal to the head of the liquid refrigerant at said point.

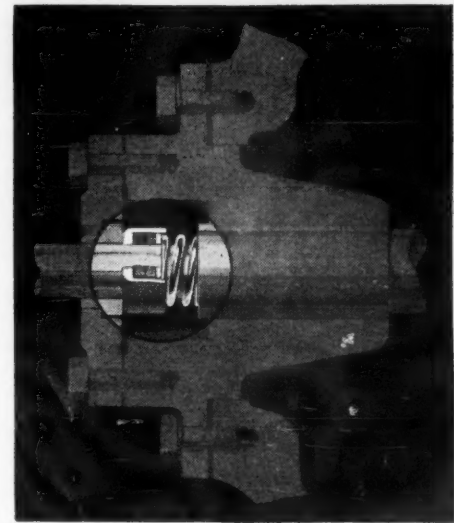
(To be Continued in Next Issue)

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